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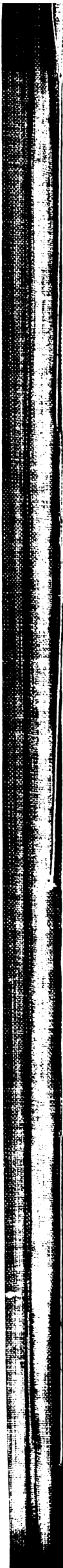
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The Telegrapher

National
Telegraphic Union



THE TELEGRAPHER:

A

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Whole No. 286

[Special Correspondence of New York Tribune.]

The British Telegraphers' Strike.—Mr. Scudamore's Censorship of Telegraph Despatches.

LONDON, Dec. 15.—With all the cards in their hands the telegraph clerks, who struck last week, have deliberately thrown their game away. They had a real grievance and the means of getting it redressed. Indeed, the absolute certainty that the department must give in if the strike became general, makes it difficult to understand the want of courage the clerks have shown. They know perfectly well that with nearly every skilled operator in England, and a good many unskilled, the telegraphs are very short-handed. If half their number had struck, and had held out for a week, they must have brought Mr. Scudamore to their terms. The public would not have permitted that functionary to shut up telegraph offices in order to indulge his taste for despotic control over his "Post-office niggers." But that nickname has done its work. Something of the submissive temper of the slave seems to have passed into the spirit of men who have borne Mr. Scudamore's yoke so long. You have only to read the pompous manifestoes of this official to see what the relations are between him and his subordinates. There is the crack of the plantation whip in every sentence.

If Mr. Scudamore's view of the relations between Post-office telegraph clerks and the Government is to be accepted, they have unconsciously lost rights which all other Englishmen possess. The language held to them is such as a hard tempered judge might use to a convicted criminal. Their conduct is a "grave offence," which Mr. Scudamore threatens to "visit with very severe punishment." Those who did not, before a certain day, express "regret for their misconduct," "it became the painful duty of the department to dismiss." The gravity of their offence can hardly be exaggerated. They have endeavored to promote disaffection. They are "guilty," but if they will humiliate themselves, and falsely declare that they regret their acts, he will take a "merciful view" in the case of those who can plead "previous good character." Nothing could be more in the Old Bailey style.

What then is the offence of the men whom Mr. Scudamore hectors and bullies in this fashion? They formed or joined a telegraphic association, and, when some of its originators had been suspended for that offence, 300 others struck. The strike is one crime, but the greatest wickedness lies in daring to form a league to obtain from Mr. Scudamore the fulfilment of promises made two years ago. Anybody who enters the Post-office telegraph service hereafter has fair warning. He puts himself completely at Mr. Scudamore's mercy. There has been a good deal of criticism, I am glad to say, in the papers on this man's wanton arrogance, but they are divided on the point whether a civil servant can be anything but a serf, or retains any capacity for self-protection.

What the English public will put up with from their paid official servants of the Scudamore kind is amazing. It is a week or more since Mr. Scudamore stopped a telegraphic message sent to *The Daily News* by its Manchester correspondent. *The Daily News* promptly protested. Not one daily paper in London, *The Echo* excepted, supported that protest, or, so far as I know, referred to the outrage in any way. Nor does the case of *The Daily News* stand alone. He read a message sent to *The Standard*, and, though he did not suppress it, forwarded with it a note saying its statements were grossly exaggerated, and that the publication of it would be prejudicial to the interest of the public. He did the same thing with a Glasgow message to *The Manchester Examiner*. It probably would do no injustice to Mr. Scudamore if we assume that he read all the newspaper despatches on the subject of the strike. The Post-office Department, of which Mr. Scudamore is Second Secretary, has neither dismissed him nor repudiated his claim that he has a right to read and stop telegrams. Not a word has been said about it officially. For aught the English public knows, the department holds Mr. Scudamore's view. There can be no doubt that he himself holds it. He has flooded the newspapers with communications about the strike, but he has found no occasion to express regret for his conduct in the matter of *The Daily News* despatch. I have some reason to think that he has privately attempted to justify his act. At any rate, nobody knows to-day whether a

message, which he is obliged to trust to the telegraph, is safe from the prying eye and grasping hand of Mr. Scudamore. He may read it or he may not. If he reads it he may send it on immediately to its destination, or he may delay it twenty-four hours, or he may suppress it altogether. If he allows it to go it is a favor; if he stops it the stoppage is an act of official discretion, and I don't suppose we should ever get back the shilling we paid for trying to send it. Englishmen grumble but stand it. Not being an Englishman, I suppose I should be thought presumptuous if I ventured even to grumble. Last year I kept my telegrams as much as possible out of Mr. Scudamore's hands, simply because the postal telegraphs under his management were slow and inaccurate. Now I must go to still more trouble, if, by chance, I want to say anything which I prefer Mr. Scudamore should not read, or which he might think the interests of the public or his own interests required him to suppress.

When Parliament meets Mr. Scudamore's pretensions will certainly be inquired into. The Government will find themselves obliged to maintain or to renounce in the most distinct way this preposterous claim of one of their subordinates. No one doubts—I presume even Mr. Scudamore does not doubt—that it will be renounced. But Parliament does not meet for another month or six weeks, and meantime we are in the hands of a man who has shown himself perfectly unscrupulous in the use of the unlimited power which he possesses over private communications.

Cheap Telegraph Tolls.

To the Editor of the Tribune.

SIR: I am constrained to call attention to the unwarrantable and oppressive rates of telegraph companies where there is no opposition. I had occasion to-day to telegraph to three different direct and easy points, and the charges were as follows:

10 words to Philadelphia, distance 316 miles....	\$1 25
10 words to York, Pennsylvania, distance 232 miles.....	1 10
10 words to Marysville, Penn., distance 198 miles	1 50

I find many places, where there are opposition lines, from which 10 words can be sent for from 20 to 30 cents for about the same distance. It seems to me that if telegraph companies were wise they would only charge fair rates; and, if they consulted their own interest, they would court business by reduction of rates. Most business men would prefer sending telegraphic despatches daily to writing letters, if it could be done for a cost of say 20 cents each, as the time spent in writing would be worth twice that amount, while the despatch in doing business, and the speedy return of capital, would soon repay the extra investment. Business men would soon educate themselves to condense, and all ordinary business could be intelligently communicated in a few words. Telegraph men, reduce the rates, increase the business, and make money.

E. GULICK.

Starkey, Yates Co., N. Y., Dec. 1, 1871.

To the Editor of the Tribune.

SIR: The letter of E. Gulick, from Starkey, Yates County, N. Y., complaining of the unwarrantable and oppressive rates which he has paid for telegraphing, has been duly received. We are much obliged for the opportunity of stating the facts of the case, which dispose entirely of Mr. Gulick's charges—at least so far as we are concerned.

He claims that he has paid for

10 words to Philadelphia, distance 316 miles....	\$1 25
10 words to York, Penn., distance 232 miles....	1 10
10 words to Marysville, Penna., distance 198 miles.....	1 50

In reply I would say:

First. The office at Starkey, Yates County, is not upon our lines, but upon the lines of the Elmira and Canandaigua Railroad Company, which connects with us at Elmira.

Second. The tariff from Philadelphia, York or Marysville, to Starkey, Yates County, both for the Railroad Company's line and for our line, is only \$1 for 10 words in each case. Any excess over \$1 which Mr. Gulick paid is due to the fault of the operator at Starkey. He is not in any manner under our control.

Third. The tariff of the Elmira and Canandaigua Telegraph lines from Starkey to Elmira is 35 cents for a distance of about 30 miles. The tariff of the Western Union Telegraph line from Elmira to Philadelphia, York or Marysville, is only 65 cents in each case. It appears, therefore, that the tariff over the railroad line is in this case more than three times higher, in proportion to distance, than the tariff of the Western Union Company.

Fourth. I consider our rate of 65 cents from Elmira to the points named as low as the business will justify. It is unnecessary to point out that between large and important offices, handling a great number of messages, we can afford to do business at rates much lower in proportion than between small places in the country, where the number of messages is necessarily limited and the business barely pays expenses.

GEO. H. MUMFORD, Vice-President.

Executive Office, Western Union Telegraph Company, New York, Dec. 9, 1871.

—New York Tribune.

The European and South American Telegraph Company.

A NEW cable company, entitled the European and South American Telegraph Company (Limited), has been organized in England, with a capital of £1,250,000, in shares of £20 each, par value. The stock was introduced in the London market Dec. 5th, 1871. This company has exclusive grants for sixty years. The cable is to be laid in four sections: Portugal to Madeira; Madeira to the Cape de Verde Islands; Cape de Verde Islands to St. Louis, Africa; and St. Louis to Brazil. By contract with lines now in operation it is proposed to connect with Brazil, Uruguay and Chili.

A fierce controversy has arisen in connection with this enterprise, three different parties claiming the Brazilian grant. The grant under which the new company claims was made to Balestrini, the original grantee, the concession to him having been made in 1866. The India Rubber Company claim that the concession belongs to them, under an agreement with Balestrini, the original grantee. The Telegraph Construction and Maintenance Company claim to have received a grant, in 1869, from the Brazilian Government. The Brazilian officials say that the Government cannot legally make the concession until the claims of the original grantee, Balestrini, are settled.

The Chairman of the European and South American Telegraph Company says that the grant they act under was given to Balestrini in 1866; that the grant was subsequently sold for a large sum to a society of seven persons, who, by a majority vote, transferred it to the E. and S. A. Telegraph Company. Balestrini objected to this, sued, and was defeated. He then transferred his rights to the India Rubber Telegraph Works Company, who formed a company now defunct. The Court of Appeals declared Balestrini's transfer void.

From communications in the London papers it would seem that the estimates of the probable amount of business of the lines when constructed vary materially, it being urged against the scheme that it is originated in the interests of the contractors, and that it can never prove a profitable investment. Hooper's manufacturing company have the contract for manufacturing the cable. It is understood that the stock of the company has all been taken, and it is reported as at a premium in the London market.

The New Censorship of the English Press.

THE London correspondent of the New York Tribune thus forcibly exposes the bad faith and stupidity of the English postal officials, which induced the recent strike of the telegraphers there, and the attempt of Mr. SCUDAMORE to establish a censorship of telegraph despatches in the United Kingdom:

"A telegraph strike is now to be added to those blessings under which we have been suffering ever since the Post-office took possession of the wires. I have no space to go into the history of it in this letter. Enough for the moment to say, that when the clerks of the old companies became Government employees,

certain pledges were made to them which have not been fulfilled. To secure their rights, and to protect themselves against arbitrary acts on the part of the Post-office authorities, a large number of clerks formed an association. No very great crime, one would suppose. But Mr. Scudamore is an official of a type probably unknown in America—one of the martinets of red tape—with a taste for tyrannizing in his own department, and of practically unlimited power. For the offence of belonging to this association he summarily dismissed nine clerks in Manchester on Thursday. When that became known about 200 others struck work. Their example was followed in Liverpool by 70 others, and in the course of the day the clerks in Dublin, Belfast, Leeds, Bradford, Huddersfield, Glasgow, Newcastle and other places struck, either in whole or in part, and most of these offices were closed and all business temporarily stopped. The delay and loss to the public have been very great. Some clerks were sent down from London in anticipation of the strike, and business has been partly resumed, but we hardly know what the real state of affairs is, for now comes the most amazing part of the story—Mr. Scudamore suppressed the news of the strike! A telegram sent by *The Daily News* correspondent from Manchester would have appeared, says that paper, in yesterday's issue, 'had not its delivery been intentionally delayed by order of the telegraphic authorities in London.' Stating the substance of the despatch, *The Daily News* adds:

"Such is the information we should have communicated to the public had not the arbitrary and unjustifiable conduct of the London authorities prevented us. Their excuse for thus acting is the exigency of the public service, and a desire not to aid in circulating particulars which may not be altogether accurate. The defence is as untenable as the original act. When the Government was intrusted with the control of the telegraphs, it was stated by the opponents of the transfer that opportunities would be created for the exercise of an official censorship over news. Judging from this case, these vaticinations appear to have been too well founded. It is one against which, in the interests alike of the public, the press, and of the telegraphic authorities themselves, we most emphatically protest."

"So that, in addition to blunders and inefficiency of various exasperating kinds, we are now to have a censorship and Mr. Scudamore for censor. It is the French Empire over again. The public is to have only such news as Mr. Scudamore considers the exigencies of the public service permit. It is all in his discretion, for if he may stop a despatch for one reason he may for another. The thing is so intolerable, and the protest of *The Daily News* so prompt, that I don't think even Mr. Scudamore will persist. If Parliament were sitting his swift dismissal would be the least expiation the Postmaster-General would probably be called on to offer. G. W. S."

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

The Only Effective Basis for a Telegraphers' Association.

MOBILE, ALA., Dec. 26, 1871.

TO THE EDITOR OF THE TELEGRAPHIC.

I TAKE it for granted every sensible man will admit that to insure the prime object of a telegraphers' organization, viz., their protection against imposition in the future and the improvement of their condition in the present, such organization must be made powerful—and the question, therefore, which should occupy the attention of those interested in a movement of this kind—which, indeed, is one that deserves the special consideration of every practical telegrapher who expects to profit by his profession—is not simply whether we can have an association—not whether all good telegraphists can be induced to connect themselves with it—but it is how such an association can be made powerful, and from the very start.

Effective power does not consist in numbers alone, when months are required to test an issue. There is very little efficient power in an organization composed of men who are almost entirely dependent upon their daily labor for their daily bread, when it has not capital enough to purchase stationery on which to write the proclamations of its executive; the truth of this is found in your own experience. A king may have a million men in the field to-day, and may overcome an adversary of equal force, if the battle can be fought and decided now, while his men are fresh and strengthened by a hearty meal, but if he has a week's march before him, through a country where nothing can be had except for gold, and his supplies are exhausted and his coffers empty, his cause is a hopeless one. The fact of the existence of opposing force inspires little terror when one is conscious of his ability to withstand or evade such force for a few days or weeks, and sure of then seeing it die of starvation.

A telegraphers' organization must have something besides numbers—it must have money. It must be powerful, both in numbers and in financial strength, or else it can never be made effective.

I have no doubt many will be startled at this pro-

position, and affect to despise it as impracticable. To such I say, "Think a little." Three fourths of the telegraphic operators in the country (the men who must compose this union) are absolutely dependent upon their profession—because, in a business sense, they are unfitted for anything else. This is the plain, lamentable truth, and cannot be evaded. Then, how can they assert and maintain their rights when deprived of situations and thrown upon their own resources, either as individuals or as a body? Here is the point. This is the question—and there is but one answer to it, viz., by providing themselves with money, upon which to live for awhile, if it be necessary, without laboring at their profession in the meantime.

The organization must have a financial basis, else it will result in no practical benefit to any except its enemies. Its efforts at reform and correction will prove, as the majority of like efforts do, miserable failures.

How many telegraphers are there in the country who could raise twenty-five or fifty dollars upon two months' notice? I think there are very few good men who could not do it. Do you say such a scheme would fail because operators would object to subscribing so much? I answer, not if they consider the subject thoroughly, for, if each member subscribe the above mentioned sum, an independent and self-sustaining power will thus be given to the association, which will render effective any measure that may be deemed expedient. Those who are not willing to enter the organization upon this condition would prove but poor supporters in time of need.

If we are to have an independent association, as my Richmond friend expresses it, let it be truly an independent association, and not one which would blush at the sound of its own name. And while "all join in the movement with fearless hearts and energetic minds," let it be with liberal purses also, for a little money assists energy and makes a fearless heart more fearless. We have nothing to expect from the stockholders in one way or another. They care about as much for our "esteem, friendship or affection," as stockholders in a coal mine care for that of the colliers', and would have the same regard for any guarantee of ours.

As your anonymous correspondent suggests, it is our money and our spirit which is to improve us, and I repeat that to attempt an organization on any other principle than the one named is mere foolishness, and does not deserve encouragement.

I certainly agree with "Sic Semper Tyrannis" in regard to meetings being held in all the principal cities instead of New York only. ALABAMA.

First Ball of the Boston (Mass.) Western Union Messengers.

BOSTON, MASS., Dec. 28th, 1871.

TO THE EDITOR OF THE TELEGRAPHIC.

THE messenger boys connected with the Western Union office in this city formed an association, and a ball was given by them last evening, which proved a very happy and successful affair for all concerned. At an early hour the boys and their friends assembled in great numbers, and dancing commenced and was carried on until a very late, or rather early hour in the morning. Everything passed off in an orderly manner, and the boys have cause to congratulate themselves on their first attempt.

Our superiors did not altogether discountenance us, for several of them visited us, and apparently heartily enjoyed themselves. Our young lady friends also assembled in good numbers, and partners were plenty until the close of the entertainment.

Hoping that we shall enjoy many more good times, and that you will kindly notice us, we remain, respectfully, THE TELEGRAPH MESSAGERS OF BOSTON.

The Telegraphs in Iowa.

KEOKUK, IOWA, Dec. 28, 1871.

TO THE EDITOR OF THE TELEGRAPHIC.

ALTHOUGH with little experience as a correspondent, yet, as we seldom see any communications from this section in our organ, I will endeavor to set an example which it is to be hoped will be generally followed.

The telegraph business here is very lively, and the lines generally work very well, with the exception of the T. W. and W. R. R. wire, which works very hard, the difficulty, no doubt, being mainly caused by the bad condition of the cable across the river here, and the poor insulation of the line between this place and Clayton, Ill., a distance of fifty miles.

The Des Moines Valley R. R. wire is under the supervision of a true gentleman, Mr. H. H. Kinnaman, but who is, I fear, hardly strict enough as a disciplinarian. The operators along the line indulge too much in the reprehensible practice of "fighting circuit," while the wire is crowded with business, which seriously interferes with and delays the prompt transmission of despatches. In stormy weather the line works rather hard, it being 240 miles long, with glass insulation. In the evening students are allowed to use the line for practicing, and as there are apparently one or two in every office, it becomes nearly impossible at such times to do any business over it.

Mr. W. H. Dolbear, formerly of the Chicago office, is the efficient and genial manager of the Western Union

office here, and he is ably assisted by Mr. A. R. Pipitt, familiarly known on the line as "Pip," who is a first class operator and a jovial fellow.

Out this way we are very much interested in regard to the effect on the position and interests of the employees which the postal telegraph system would have if adopted in this country, and desire to hear more upon the subject through your columns.

THE TELEGRAPHIC comes regularly, and is heartily welcomed on its weekly advent, and it has the best wishes, for its continued success and prosperity, of the Western telegraphers. K. K. K.

Errata.

In the letter from Oil City, Pa., in the correspondence department of THE TELEGRAPHIC, published Dec. 23d, by a typographical error the first paragraph is made to read "or how the change would effect them," instead of "affect them," as written. This correction is made at the request of the correspondent.

Personals.

Mr. W. H. THOMPSON, formerly of Oil Creek and Alleghany River Telegraph, has been appointed chief repairer of the Burlington and Missouri River Telegraph. A worthy appointment.

Mr. M. D. BRIGGS has been transferred from Kidder Station to Clarence, on the Hannibal and St. Joe R. R. line.

The California and Oregon Railroad has been completed to Red Bluff, Cal., and Mr. F. A. SMILEY has been appointed telegraph operator at that station.

The Western Union Co. have opened an office in the State Capitol at Sacramento, Cal., with Mr. W. TINGMAN as operator.

The Atlantic and Pacific Co. have also opened an office in the State Capitol at Sacramento, Cal., with Mr. L. H. BANVARD as operator.

Mr. G. H. RICE has resigned as train despatcher of the Humboldt Division, C. P. R. R., and Mr. F. FREE has been appointed to the situation, with Mr. J. WHITED as operator.

Mr. H. F. DYER has accepted a position as operator at Carlin Station, C. P. R. R.

Messrs. JOHN BELL and R. STARR have accepted positions in the train despatcher's office of the C. P. R. R., at Wadsworth, Nevada.

Mr. FRANK BISHOP accepts the position of telegraph operator, C. P. R. R., at Cisco, vice Mr. JOHN HOSKIN, resigned.

Mr. CHARLES CLAYTON has been appointed agent and operator of the C. P. R. R. at Humboldt, Nevada.

Mr. C. M. DAVIS has resigned his position with the A. and P. Telegraph Co. at Ogden, Utah.

Mr. C. A. DYER has accepted a position in the Western Union San Francisco, Cal., office.

Mr. H. F. POWELL has been appointed agent and operator C. P. R. R. at Lathrop, Cal., vice H. C. WILLIS, who resigns to quit the business.

The Telegraph.

By Cable.

ADJOURNMENT OF THE INTERNATIONAL TELEGRAPH CONFERENCE.

LONDON, Dec. 30, 1871.—The International Telegraph Conference at Rome has adjourned. Its next meeting will be at St. Petersburg, in 1875.

[Special to the New York Herald.]

A BANQUET GIVEN TO THE MEMBERS OF THE INTERNATIONAL TELEGRAPH CONFERENCE BY MR. CYRUS W. FIELD.

LONDON, Jan. 1, 1872.—Mr. Cyrus W. Field entertained the members of the Telegraphic Conference assembled in Rome at a banquet given in that city to-night.

There were present in the hall the representatives of twenty-one countries, of six hundred millions of people, and of twenty-six different languages.

Private companies were represented to the amount of 300,000,000 francs.

Mr. Field delivered an eloquent address, in the course of which he invited the members to a reassemblage of the Conference in St. Petersburg in the year 1875.

The other speakers, with Mr. Field, urged the necessity of union, and of aid from the Governments in the cause of telegraphic communication.

A Telegraph Conference will be held in Naples to-morrow.

PROJECT OF AN ANGLO-AMERICAN CONTROL OF THE ATLANTIC CABLES.

LONDON, Jan. 2, 1872.—The idea has been started of transferring the property in, and control of the Atlantic cable lines to a joint control of the Governments of Great Britain and the United States.

The proposition is received with favor, in anticipation that it may result in the reduction of the present exorbitant rates of tariff on cable messages.

ITALIAN BANQUET TO THE MEMBERS OF THE INTERNATIONAL TELEGRAPH CONFERENCE.

ROME, Jan. 2, 1872.—Signor Visconti-Venosta, the Italian Minister of Foreign Affairs, gave a dinner to the delegates of the International Telegraph Conference to-day.

A New Tariff Rate.

On the first instant a new tariff was established by the Western Union Company, and went into operation, which gives a single rate for every office in a State with every office in any other State. How much of an improvement on the previous tariff rates this will prove remains to be demonstrated.

A Novel Method of Operating a Railroad by Telegraph.

THE Denver, Col., correspondent of the *New York Tribune*, in a recent communication, gives the following interesting details of a novel method adopted for running of trains on the Denver and Rio Grande Railroad by telegraph:

"It is hoped that accidents by the narrow gauge will be few, because with the ordinary brake a train can be brought to a stand as quickly as other trains can be by the improved patent brakes. The centre of gravity in the small cars is ten per cent. lower than in the larger ones, hence the cars are less likely to overturn, and the whole weight of the train being less, collisions must be less violent. The Denver and Rio Grande line is conducted under a new method. The engineer alone has charge of running the train. The conductor is an agent, and he is also a telegraphic operator. He carries a telegraphic apparatus with him, and stations are attached to telegraph poles—being little more than shelves—and the agent communicates orders to the engineer. The poles are numbered in mile sections, from 1 to 26, and the miles are marked on the poles as if milestones. By this means the engineer, who keeps record of the condition of the track, can report to the master mechanic at the end of the trip, or sooner, any defect within 100 feet, by naming the number of the pole and section where work is needed. The master mechanic has charge of maintenance of way, and, having reports by telegraph, as above stated, he at once directs where work is to be done. It is reported that this road is to be extended to the old City of Mexico, and that offers of money have been made from the owners of rich mines in that remote region. Thus we may expect that this road, now just commenced, will be extended to the capital of the Montezumas—a distance of over 1,800 miles from Denver. It is to be said, in addition, that an extension of the narrow gauge northward has been surveyed, running through our town, to connect with the Union Pacific at Pine Bluff."

Presentation to a Telegraph Manager.

MR. R. S. FOWLER, the popular and highly esteemed manager of the Western Union Telegraph office at Dubuque, Iowa, was, on Christmas day, presented with a magnificent and valuable watch and chain, by the employees on the line extending to Sioux City and Cedar Rapids, and the railroad employees of the two roads.

Mr. Edward Sholes made the presentation to Mr. Fowler. Accompanying the present was the following document, which was signed by the donors, some eighty in number:

"TESTIMONIAL TO R. S. FOWLER.

"Please accept the accompanying watch and chain as a slight token of respect, affection and esteem, from your many friends, who hope it will prove acceptable as well as useful. All unite in wishing you many happy returns of the day."

Mr. Fowler responded in the following letter, which was transmitted by telegraph to every operator on the line:

"Dubuque, Dec. 25, 1871.

"TO MY FRIENDS: The receipt of so elegant a testimonial at your hands is, indeed, a pleasant surprise. I can but return to you my most heartfelt thanks, and hope that the business relations and social intercourse between us, which has been uninterrupted for over five years, may continue through many returns of merry Christmas. Very truly yours,

R. S. FOWLER."

The watch is one of the finest ever brought to this city—in finish and design equalled by few. It is a three ounce case, finely engraved, bearing his initials, "R. S. F.," in monogram on the outside, and inside the case the following inscription:

"To
R. S. FOWLER,
FROM HIS TELEGRAPHIC FRIENDS,
DECEMBER 25,
1871."

How it Works.

THE following, from the Providence (R. I.) *Daily Journal*, heretofore favorable to the postal telegraph project, is suggestive, and shows the effect of the tyrannical administration of the postal telegraph in England upon those who have been inclined to advocate its adoption in this country:

"One of the disagreeable possibilities of a connection of the telegraph offices with the postal system under the control of Government has just been illustrated in England. There was a strike of telegraph operators in Manchester, and the fact was embodied in a despatch telegraphed to the London *Daily News*. The post-office authorities thought the publication of the news of the strike might cause them some embarrassment, and withheld the despatch.

"It is hardly worth while to hasten the introduction here of a system fraught with so many possibilities of mischief and embarrassment."

Foreign Telegraphic Notes.

Two subterranean lines, of thirty miles each, will have to be laid in the snow regions of the Cordillera in the prosecution of the Transandine telegraph line. The work is in an advanced state, the laying of these lines having been commenced. It is expected that the whole work will be completed and the line opened to the public during the month of February next.

The *Panama Star*, of December 18, states that by private advices per steamship Elbe we learn that the steamship International, with the new cable for the Kingston and Aspinwall line, had arrived at St. Thomas, and was detained there in quarantine on account of having small-pox on board. We learn that the work of laying the new cable will soon be commenced, under the superintendence of Mr. Barrett.

In consequence of the new telegraphic treaty between Russia and Persia preparations are being made for the erection of a number of new lines of telegraph. The lines, radiating from a central station at Astrakan, will skirt the lower Volga and the Caspian Sea.

The number of messages forwarded from postal telegraph stations in the United Kingdom during the week ending the 9th of December, 1871, was 229,383—an increase of 50,279 on the corresponding week of last year.

The Riband Telegraph Pole Company are erecting extensive works at New Islington, Manchester, capable of turning out 500 poles per day.

Telegraphic Brevities.

THE Western Union Telegraph office at Jersey City, N. J., which for many years has occupied a room in the second story of the railroad depot, has been removed to a new and convenient location on the ground floor. The new office has been neatly and tastefully fitted up under the direction of Mr. G. R. Cary, the manager, and presents a very attractive appearance. This is one of the most important test stations on the Southern wires.

The telegraph and despatchers' office of the Central Railroad of New Jersey, at Jersey City, has also been removed to a new and convenient building, which has been erected for that purpose near the west end of the depot.

A bill has been introduced in the California Legislature, and referred to the appropriate committee, giving to the Pacific Submarine Telegraph Company the right to construct lines and land cables for an interoceanic telegraph to China and Japan, either direct or by the way of the Hawaiian islands.

Concerning the late storm on the Kansas Pacific, a Kansas paper says that the telegraph poles were blown across the track for miles, the wires becoming entangled with the engine and wheels of the train, and the engineer and fireman were driven from their posts. Whole herds of buffalo crowded around the cars, seeking shelter from the storm.

Mr. Scudamore's Attempted Censorship of Telegraph Messages.

THE fact that neither Mr. SCUDAMORE or his official superiors have apologized for or repudiated his claim to establish a censorship of the press and other despatches, transmitted by the Government telegraph, proves that he and they regard it as one of the legitimate functions of Government telegraph officials, to be exercised whenever, in their opinion, the exigencies of the Government or the service may require. This very danger of a Government censorship was one of the arguments used by the opponents of the scheme in England, and the idea was scouted as preposterous. Less than two years have passed since Government assumed control of the telegraphic system, and already the prediction is verified. The same argument, and the same response to it, has been made by the opponents and the friends of the postal telegraph in this country. From the result in England we may see what may be expected here, except that it will be likely to come even sooner than it did there.

Government administration of the telegraphs, and a censorship in some shape, would unquestionably go together. Fortunately, the cloven foot has been shown in England in time to avert a similar calamity here.

There can be no effective reply to this argument now on the part of the advocates of a Government telegraph in the United States, if any such yet remain, after the recent developments in England.

The Railroad Gazette.

WE desire to call the attention of all persons interested in railroad matters to the advertisement of *The Railroad Gazette*, which appears in our advertising columns. The *Gazette* is unquestionably the best publication in this country specially devoted to railroad interests. It is ably edited and conducted, and should be taken and read by every person who is engaged in or interested in railroad service.

The commencement of the new year is an excellent time for new subscriptions to begin.

New Patents.

For the week ending December 5, 1871, and each bearing that date.

No. 121,620.—ELECTRIC INDICATOR FOR ELEVATORS. Edwin Holmes, Brooklyn, N. Y.

1. The combination of an elevator, which contains an indicator, C, with a series of flexible or movable metallic conductors, which connect the wires a at a1, a2, &c., on the elevator with the b b1 b2 b3, &c., in the building.

2. The combination of a movable elevator with an indicator moved by electrical impulse from stationary floors of a building.

No. 121,622.—ELECTRO-MAGNETIC SEWING MACHINE. George M. Hopkins, Albion, assignor to himself and George H. Shattuck, New York, assignors to Henry G. Thompson, Milford, Conn.

1. The combination of the helices D D with the needle bar B of a sewing machine, substantially as shown and described.

2. The combination of the helices D D with the rod E, or its equivalent, and the shuttle carrier or looper of a sewing machine, substantially as and for the purpose hereinbefore set forth.

3. The gearing F, in combination with the above devices, as shown and described.

No. 121,717.—Antedated December 9, 1871.—ELECTRIC FIRE ALARM. Edward A. Hill, Chicago, Ill.

1. The combination of the electro-magnet or core u with the pivoted magnet-J and curtain I, substantially as and for the purpose specified.

2. The combination of the pivoted magnet J and curtain I with the sliding bar K, provided with projections, m, substantially as and for the purpose specified.

3. The combination of the plaster shell, or shell made of like material, c, with the tube b of a mercury connector, as and for the purpose specified.

No. 121,870.—ELECTRO-MAGNETIC SIGNAL HOUSE. Thomas S. Hall, West Meriden, Conn.

The railroad electro-magnetic signal and battery house, provided with two or more non-conducting chambers or spaces, surrounding the battery chamber, and an inclosed signal cupola, substantially as described.

For the week ending Dec. 19, 1871, and each bearing that date.

No. 121,971.—PROTECTIVE ELECTRIC TELEGRAPH. Joseph W. Slover, Boston, and Moses G. Crane, Newton, Mass.

1. The combination of a local circuit, a clock mechanism and a main circuit, the clock mechanism being the means of communication between the local circuit and the main circuit, and having a rotary main circuit breaking and closing wheel, which, at each break of the local circuit, is caused to intermittently break and close the main circuit, and by such breaking and closing to effect an alarm at the central office, substantially as described.

2. A signal box containing a local circuit magnet, an armature effecting connection and disconnection between such magnet and the gear or clock train (the armature being normally closed against the magnet), a gear train actuated by a spring or weight, and set in motion by release of the armature, and a rotating main circuit breaking and closing wheel, actuated by the gear train.

3. In combination with the local circuit, normally closed, the main circuit and the gear train and main circuit breaking and closing wheel, the cut-out switch or switches, substantially as shown and described.

4. In combination with the local and main circuits and connecting mechanism, arranged substantially as described, the test circuit and the gong struck by the hammer projecting from the test magnet armature lever, substantially as shown and described.

5. In combination with the local circuit, normally closed, and the main circuit and gear train, and the rotary main circuit breaking and closing wheel, the stop on the armature lever and the stops on the gear wheel y so arranged that by the breaking of the local circuit the gear wheel is liberated and rotates, but at the end of one rotation is arrested, substantially as shown and described.

6. The general construction and arrangement of the system, substantially as shown and described.

No. 122,015.—MOULDING TELEGRAPH INSULATOR. Robert Hemingway, Covington, Ky.

1. The mode or process of forming the cavity in telegraph insulators, by first forming the unthreaded wider portion of the cavity by a threadless plunger, and, while the glass is yet hot, forming the threaded deeper portions by means of a screw threaded plunger or mandrel, substantially as set forth.

2. The described combination with the mandrel F of the collar or sleeve I, whether yielding or otherwise.

3. In the described combination with the mandrel F the spring H, for the purpose designated.

Recent British Patent.

No. 1,150.—S. A. Varley, Roman Road, Holloway, Middlesex. ELECTRIC TELEGRAPH APPARATUS—PARTLY APPLICABLE FOR OTHER PURPOSES. Dated April 29, 1871.

An apparatus opening and closing the circuit, through soft iron cores, surrounded in the insulated wire by a commutator, in connection with permanent magnets, develops electric currents, which are indicated on a dial; or, by means of a second commutator, positive or negative currents can be sent through the telegraphic circuit at will.

Born.

MARSH.—In Pittsfield, Mass., January 8d, to P. M. MARSH, line repairer Western Union Telegraph Co., a daughter.

Married.

ARBuckle.—At the residence of Mr. H. Wentworth, Christmas Eve, Dec. 24, by the Rev. A. H. Annis, Mr. FRANK P. ARBUCKLE, agent and operator Kansas Pacific R. R., at Fossil, Kansas, to Miss EMMA SWIFT, of Fond-du-lac, Wisconsin.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.

FRANK L. POPE, Associate Editor.

SATURDAY, JANUARY 6, 1872.

Why High Rates for Telegraphing are Necessary in this Country.

We print in another column a correspondence which appeared in the *Tribune* of this city two or three weeks since, and which has attracted considerable attention, relating, as it does, to a matter in which so many of the community are directly interested—the charges for telegraphic service. That, notwithstanding the comparatively high rates of charges for telegraphic service in this country, telegraph property has proved unremunerative to stockholders, is a fact to which thousands of telegraph proprietors can testify. Without attempting to analyze or criticise the varying rates of charges for locations of more or less importance, and longer or shorter distances, we propose to briefly indicate why the charges for telegraphic service are necessarily higher in the United States than in European countries, or even in the Canadian Dominion.

The principal obstacle to a reduction of tolls, which would bring them, other things considered, into proportion with those of our Canadian neighbors, is in the imperfect construction of telegraph lines in this country and the defective character of the insulation generally used. With lines constructed and insulated as most American lines are, it is impossible to obtain from them the maximum amount of service which they should be capable of. The poles are too light, and not sufficiently deep set to make them permanent and reliable supports, and are constantly requiring repairs and renewal. This is an important item, and one which has received too little consideration from telegraph managers and constructors. Then, again, the insulation used is of the most defective character, and such as fails even with a moderate storm, and in one of any considerable length or severity frequently gives out altogether, or allows the wires to be worked but slowly and in short circuits. We have written and published much on this subject of insulation, because it is one of the most vital importance to all telegraphic enterprises. The insulators generally used are of a kind which, when insulating properties are most needed, are but little if any better than no insulation at all. As a consequence, for a considerable part of the time, the wires are capable of affording but a small percentage of the service they should do, and can be worked only at a loss, even at the existing scale of charges. Another serious defect in American lines is the use of conductors or wires of comparatively low conducting capacity. This is more apparent on long circuits, and greatly reduces the capacity of the lines for business.

In all these matters, which elsewhere are carefully studied with a view to obtaining the best results from telegraph lines, there is manifested on the part of telegraph managers an indifference or prejudice which is in the highest degree inimical to the success of the business under their charge. As a rule, the lines are constructed by contractors with a view to realizing the largest possible profits from their contracts. The services of a telegraphic engineer and electrician are considered superfluous, or, if regarded as of any importance at all, as not requisite until after the lines are built and in operation, and then he is expected not to originate ideas or suggestions, but to confirm those of the President, Superintendent or other officials. In addition to the deficiencies and disadvantages above enumerated, it has become customary, of late years, to crowd a large number of wires upon one set of poles, when they happen to be of sufficient strength to support them. A web of wires, separated by only from 12 to 18 inches of space, may be seen on most of our principal telegraphic routes, and more especially upon Western Union poles. These are insulated with glass

insulators, and at all times more or less of the electric current escapes from one to the other, so that even in the most favorable atmospheric condition cross working may be felt from one to the other, and, when the air is saturated with moisture, this becomes so great that it is necessary to open all but one or two in order to work any of them. The consequence, of course, is the loss of the use of the wires for the time, and reduction of the capacity of those which are worked to the minimum. Every telegraph operator knows that this statement is not an exaggeration, and is only the experience of almost every telegraph office on a main route whenever a storm of any length or extent takes place.

It is bad policy to thus crowd the wires when it can be avoided, even when the best insulation is used, as placing them so close together renders them liable to frequent crossing and interference with one another, but, with such insulation as is used on the majority of telegraph lines, it is simply suicidal, so far as business is concerned. It makes telegraphing costly and wasteful, increases the cost of repairs and reconstruction, consumes battery material to an enormous extent, and while entailing upon the employes excessive, annoying and unnecessary labor, deprives the company of a large proportion of the benefits which should be derived from their services.

It is impossible that telegraph men should accede to Mr. GULICK's suggestion to "reduce the rates, increase the business, and make money" with such lines and such management—or mismanagement—as characterizes the business generally in this country.

We live in hopes that this disgraceful condition of telegraphic affairs may not always exist, but from present indications it would seem highly probable that we may "die in despair." New telegraph companies repeat the follies and absurdities of their predecessors, and the old game goes on of building lines for the benefit of contractors and the ruin of stockholders. The Western Union Company, which has the means of inaugurating a reform in these respects, is, as far as the Eastern Division is concerned, at least, and as far as the influence of the executive office can effect it on other divisions, deteriorating rather than improving. The other companies are content to follow in the wake of their overshadowing neighbor and tamely copy its errors, not seeking to secure the advantage which their reform would give them.

Another reason why telegraphic service in the United States cannot be afforded at as low rates as in other countries is the great extent of territory which has to be covered, much of it very sparsely settled, and as yet giving but little towards the maintenance of telegraphic facilities. Again, labor here commands higher compensation, and the services of telegraph employes must be paid for at about double in currency what is received for similar service, even in Canada, and treble and quadruple that of European countries. Rent and every other expense of telegraph companies is much higher here than anywhere else, and, therefore, telegraphic charges must, in any case, be larger. But, notwithstanding, a telegraph line or system constructed on correct principles, and with improved instruments, could unquestionably prove successful pecuniarily, and at a lower tariff than that which now fails to satisfy the public or remunerate telegraph proprietors.

The Strike of the British Telegraphers.

We have not as yet been able to obtain the details of the termination of the strike of the British postal telegraph operators. It will be seen from the letter of the London correspondent of the *New York Tribune*, which we reprint on our first page, that the movement was not sustained, and that the strike was not of that general character which was essential to its success. The later advices confirm the impression that the association was attacked, and forced into a demonstration before it had time to become fully organized and generally extended, and that but a few telegraphers, not members, joined in the movement. Although successful in this instance in defeating the employes, the weakness and danger of the postal telegraph system has been demonstrated, and, taught by their present experience, it is to be hoped that the employes will take such measures as shall ultimately secure them the treatment of reasonable beings instead of serfs.

The following card from Mr. SCUDAMORE is the latest official advice we have as to the strike. It will be seen

that the offending employes have nearly all been restored to duty.

"GENERAL POST-OFFICE, Dec. 14, 1871.

"Mr. Scudamore presents his compliments to the Editor of *The Daily Telegraph*, and begs to state that, out of 219 telegraphists who were dismissed for absenting themselves from duty without leave, 198 have already, on their own application, been restored to duty."

This general restoration to their positions is explained by the statements in the letter of the correspondent of the *Tribune*, that "with every skilled operator in England, and a good many unskilled, the telegraphs are very short handed." The criticisms of the correspondent on the tone of Mr. SCUDAMORE's manifestoes during the strike, although severe, are not more so than is deserved. From all that can be learned of the postal telegraph service in England, and the temper and manner in which it is conducted, it would appear to be a very good service to get out of; and although it is difficult in Great Britain for a person to change from one employment to another, we hope that as many of the employes as can do so will seek other business, and leave Mr. SCUDAMORE to run his department without their assistance.

The straits to which the strike threatened to reduce the department is forcibly indicated in the following, which we copy from the *Mechanics' Magazine*:

"Great efforts have been made to provide aid to the Postal Telegraph Department from the Royal Engineer Corps, to help in meeting the difficulties caused by the strike of telegraph clerks. Yesterday a second detachment of men from the 4th Company, at the School of Military Engineering at Chatham, left headquarters for London, for service as telegraphists, under the Postmaster General. Other men are now being taught the use of the telegraphic instruments at the School, and when proficient they will also be sent to London. The party of engineers who left Chatham for London on Friday, to act as telegraph clerks, after they had been joined by parties from Aldershot and Dover, were sent on to Dublin to be employed in the Post-office there."

What efficient telegraphists must these soldiers be after a few days' instruction in the use of instruments! It is a good thing that the British telegraphs are a Government monopoly for one thing—there will be no chance for collection of damages for the losses arising from the blunders of these improvised telegraphic artists. How advantageous it may prove to the patrons of the telegraph is another matter.

The Prince Edward Island Cable.

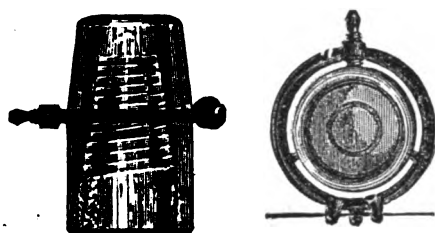
We are requested, by the representative of the New York, Newfoundland and London Telegraph Company, by whom the Prince Edward Island Cable is owned and operated, to explain the situation of the cable, and correct the impression conveyed by the statement in *THE TELEGRAPHER* of Dec. 23d, that the company is derelict in its duties in the premises.

The cable was laid in its present location to accommodate the authorities who have postal stations at the landing places. The cable has been repaired at considerable expense, and, including the subsidy, the receipts of the line for business has never been a source of profit to the company. The company has repeatedly offered to turn over the line and cable to the authorities of the island and relinquish their claim to the subsidy, or to transfer the line to any one who would maintain the line, and who was satisfactory to the authorities. No such arrangement could be effected, however. We are told that company is now willing to do this. When the season will permit the cable will be repaired and communication will be restored.

Chester, Partrick & Co.

THE new advertisement of CHESTER, PARTRICK & Co., which appears in this number of *THE TELEGRAPHER*, will be found of interest to those who may have occasion to purchase telegraphic or electrical apparatus or material, or who may have telegraph lines to construct, or desire the introduction of the various applications of electricity, such as protection from thieves and housebreakers, gas lighting, &c., &c. Mr. JAMES PARTRICK has returned permanently to Philadelphia, and resumed the personal management and supervision of the business of this enterprising firm. His ability and practical experience as an electrician and telegrapher, and his popularity and geniality, cannot fail to give a renewed impetus to the business of the firm of which he is the managing partner, and make it even more successful than heretofore.

CHESTER'S PATENT INSULATOR.



The undersigned solicit examination of some of the reasons which have induced them to recommend to their patrons and friends the Insulator exhibited above as the best and cheapest in use.

Experience has shown that pure glass is, under certain conditions, nearly a perfect insulating medium, and could these conditions be uniformly maintained for all purposes of practical telegraphing, we might rest there, satisfied that so long as the conducting wire be separated from its various points of support by a glass shield, of whatever size or shape, that there could be no escape of current from the conducting wire.

These conditions are simply that there should exist no conducting medium from the wire to its point of support *over the surface of the glass, or through fissures or imperfections.*

The conducting media, which, to a greater or less degree, are inseparable from ordinary insulators of glass, hard rubber, earthenware or porcelain, are continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire.

It is also evident that the amount of conductivity over each and every insulator, arising from these causes, is *decreased* by the longer distance the current must traverse these imperfect conductors between the wire and its point of support, and is *increased* by the increased diameter or breadth of the Insulator, as affording a greater number of these lines of conduction. When glass only is regarded, another objection also exists to great thickness, in the fact that the unequal cooling of the mass produces innumerable microscopic surface fissures, which at certain temperatures absorb moisture from capillary attraction.

Glass of ordinary surface, such as is used for ordinary Insulators, hard rubber, porcelain and earthenware, have in different degrees the capacity for receiving and retaining surface moisture in continuous lines, either from direct showers or by the condensation of moisture upon even an apparently dry day, when the thermometrical changes are such that the temperature of the Insulator is less than that of the atmosphere.

The original surface fractures alluded to in ordinary Insulators of glass are much increased, and others are produced by the necessary strains and shocks to which they are exposed during the erection of the wire and its subsequent swaying. These are the more vicious, as they are not apparent from any ordinary point of observation.

Hence, the requisites of a perfect Insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible; *while its width should be as SMALL as possible.*

In the construction of Insulators great ingenuity has been exercised to give strength, and yet elongate and narrow the lines of superficial continuity. The support of the wire has been drawn out to as great a length as is consistent with strength, and the glass has been made narrow, and Insulators thus made have proved very serviceable. It is obvious that there is a limit to this idea under old forms of construction.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal. It requires no labored description to bring out the self-evident fact. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH. The removal or substitution of an Insulator, without disturbing the conducting wire, is an incidental advantage of this construction.

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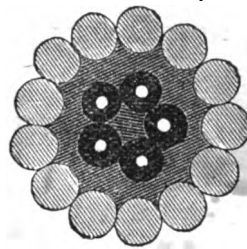
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The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 21.

New York, Saturday, January 13, 1872.

Whole No. 287

Original Articles.

Boston Telegraphic Notes and Notions.—The New Electric Railway Signals.

Boston, Jan. 8, 1872.

It is a well settled fact that things are never done in Boston exactly the same way they are in other places. This is quite as true in respect to the telegraph business as anything else. The peripatetic telegrapher, who makes his advent here for the first time, and who essays to find his way to the "main office" by a method which he has practiced in all the other cities of the United States with unvarying success, to wit, "following the lines," finds, to his amazement, that it won't answer—not in Boston. He alights from the cars and emerges into the street. Nothing in the shape of a telegraph pole is visible anywhere. Even if the streets were wide enough to accommodate telegraph poles—which they are not—they are never straight for a sufficient distance at any one point to make a practicable route. There is a labyrinthine network of wires above the house-tops, to be sure, but, unfortunately for our traveller, no two of them apparently run in the same direction, so he has to give it up and inquire the way of a policeman, like any ordinary mortal. If he is an observing individual, the next peculiarity that will probably strike him will be the number of different sorts of insulators on these house-top lines. Every kind that was ever used anywhere, besides a good many that were never used out of Boston (and never ought to be), will be found represented. The Brooks is an exception. That is a Philadelphia invention, and, of course, Boston wants nothing to do with it.

The Western Union Company have a very commodious and well arranged establishment at No. 83 State street, which they have occupied for about two years past—that is, in its present shape. The receiving and delivery departments are on the ground floor, and entered directly from the street. This room is neatly fitted up, and presents an attractive appearance. The operating department was formerly in the rear portion of the room. It now occupies a spacious apartment on the fourth floor, perhaps 80 feet by 25 in size, with very fair light and ventilation.

There are now about 50 main wires entering this office, in addition to four city or local wires, and nine loops running to brokers' offices, &c.

These wires are brought into a cupola in the roof—which, by the way, is remarkably well arranged—and are led to a handsome Milliken switch, placed in the middle of one side of the room. The number of wires has of late rather outgrown the dimensions of the switch, and a larger one will soon be required.

The instrument tables are 12 in number, of the handsome and convenient pattern first introduced in the Washington office, and now used in nearly all the larger Western Union offices. Each table is divided by semi-transparent glass screens into compartments, for the accommodation of four instruments and operators—the sound of each instrument being effectually prevented by the screens from interfering with that of the others. At night a single Argand burner, placed in the centre of each table, lights all four compartments at the same time.

The main operating room contains 42 sets of Morse instruments, two combination printing instruments, and three sets of Milliken repeaters, all of Phelps' make. There is also one set of Stearns' double transmitters, which is worked on one of the New York wires, and was made by Williams. Two of the repeaters are employed on the Atlantic cable circuits, and the third is kept for general use in emergencies.

The number of operators employed here is usually about 40, exclusive of those working in branch offices, and including six ladies, who have a pleasant operating room by themselves on the third floor, accommodating eight wires.

The Boston office deserves the credit of having about the best arranged and best kept battery room I have ever seen. It occupies a spacious attic directly above the main operating room. The main lines leading from the office are worked by 200 Grove cells, divided into batteries of convenient size, while 66 additional cells of the same kind are used for locals. In bad weather the main batteries are slightly increased.

There are also 110 cups of carbon bichromate battery, from which are worked the wires of the Gold and Stock Telegraph Company, whose office is in the old State House. It would be hard to find a more intelligent, careful and conscientious battery keeper than John Hutchinson, who has presided over this department for a long term of years. The admirable condition of the batteries in this office is something that all concerned may justly take pride in.

The manager of the office is Mr. Geo. F. Milliken, who has held the position many years. He is an electrician of ability, and is well known in the profession as the inventor of the repeater and switch which are known by his name. He was also associated with Mr. Farmer in the invention of the "compound wire," which is destined in the future to work a complete revolution in American telegraphic construction. Mr. C. W. Henderson is chief operator of the office and J. W. Duxbury assistant. The night manager is E. F. Leighton, formerly of the United States line.

There are about 30 branch offices in the city and suburbs, exclusive of brokers' offices, situated in the railroad depots, hotels, etc., one of the circuits, being so arranged as to place the depots of the different railroads in connection with each other.

The wires entering Boston are under the jurisdiction of three different District Superintendents. J. S. Bedlow, of Portland, has charge of the lines running east, and C. F. Wood, of Boston, of those going west and south, while G. W. Gates, of White River Junction, Vt., attends to the northern wires. Mr. Gates is now engaged in rebuilding his lines between the main office and Somerville—running over buildings to the Lowell depot, and thence along that railroad to the Fitchburg crossing in Somerville. I noticed him the other day hard at work with his men arranging the cable houses at Charles River, and, as he attended to it himself, was not surprised afterwards to find he had made a remarkably good job of it. As a general thing, cable connections in this part of the world are arranged with an amount of awkwardness and unskillfulness that is positively wonderful. I have had occasion to observe some of Mr. Gates' construction before, and the care and thoroughness displayed in the minor details was worthy of high commendation.

The Gold and Stock Telegraph Company, under the management of Mr. Suel Smith, are rapidly extending their business here. They have a central office in the old State House building, and are working nearly 40 printing instruments, of the two wire Edison pattern.

I looked into Williams' establishment the other day and found matters looking very lively. He is employing about 30 men, and doing a very large amount of work. In addition to standard telegraph instruments, of which he is making a great many, he turns out burglar alarms by the quantity, together with not a few printing instruments. He also does a great deal of miscellaneous jobbing. The uniform good character of his work, and his evident anxiety to give his customers entire satisfaction, are rapidly extending his reputation and business as a manufacturer.

The electric signals which were put up last fall on the Lowell Railroad, between Boston and East Cambridge, of which some mention was made at the time in the columns of THE TELEGRAPHER, have worked in the most satisfactory manner ever since, barring an accident which happened to the Charles River cable a few days ago, and which caused a temporary interruption. Much interest is manifested by railroad men here respecting the practicability of bringing the system into general use, and, despite the notorious old fogeyism of the railroad managers of this region, the invention seems to be regarded with a good deal of favor. The Revere accident appears to have stirred up these inveterate Rip Van Winkles to a most unprecedented degree. Some of them are going so far as to actually make use of the telegraph for moving trains when they are behind time. Verily the world does move, even as far east as this! F. L. P.

The Troy, N. Y., firemen in one engine house started the alarm telegraph, New Year's day, as a joke. They kindled a fire of wrath in the mind of the chief, and he may resign.

The Thames tunnel, thought to be such a novelty, was anticipated by one under the Euphrates at Babylon, and the ancient Egyptians had a Suez canal.

The Pneumatic Despatch System in England.

At the opening of the (London) Institution of Civil Engineers, Mr. Carl Siemens read a paper on "Pneumatic Despatch Tubes—the Circuit System." After referring to the pneumatic tubes laid by the Electric and International Telegraph Company, to connect their central station with their nearest branch stations in London (considerably extended since the telegraph had passed into the hands of the postal authorities), Mr. Siemens stated that in April, 1863, the Prussian Government applied to Messrs. Siemens & Halske, of Berlin, to suggest a system for that city. The firm proposed laying tubes in circuit, traversed by an air current always kept flowing in the same direction. The peculiarities of this system—the continuous current of air, and the power of putting carriers into the tubes at any point—gave it great superiority in the amount of work it is capable of doing. The Central Telegraph station and the Exchange at Berlin were connected, in 1865, by two parallel lines of drawn wrought iron tubing, two and a half inches internal diameter—one used exclusively for carriers in one direction, and the other for carriers going in the opposite. The continuous current was produced by a steam engine working a double acting air pump. Allusion was then made to the circular pneumatic system in Paris, in which a continuous current was not used, and to the pneumatic line in London, from Euston to the General Post-office, for large parcels. An account was then given of the experimental circuit laid by Messrs. Siemens, between the Central Telegraph station and the General Post-office, opened February, 1870, and subsequently extended to Fleet street and the West strand. The stations were connected by two lines of wrought iron tubing, internal diameter three inches, both laid in the same trench, parallel, 12 inches below the pavement. The tubes were of the average length of 18 feet 8 inches, a common lead and yarn joint making the connection between each tube. A current was kept constantly circulating by a steam engine and double acting air pump in the basement of the telegraph station. Each station on the circuit had two sending and receiving instruments—one on the up and one on the down tubes. The carriers for the reception of telegrams, letters, &c., consisted of small cylinders of gutta-percha, papier maché or tin, covered with felt, druggat or leather. It was found in practice that the carriers need not fit the tubes at all accurately. Mr. Culley, chief engineer of the Post-office telegraphs, had adopted the block system, such as was used on railways, for working the tubes. The total length of line now working in London is 6,800 yards. It is found that the speed of the carrier is much greater as it approaches the vacuum end of the tube than at the other end. The necessity of having a steam engine with air pumps and reservoirs was a great hindrance to the general introduction of pneumatic tubes; but this inconvenience had been successfully removed by the construction of an exhausting apparatus, worked by the direct action of steam upon a current of air. In this the steam from a boiler was made to issue, in the form of a hollow cylinder, from an angular nozzle in the centre, the opening having a width of about one millimetre all around. The steam issuing in this form had the greatest possible surface, both inside and out, for contact with the air in the apparatus—which air was in connection with and was drawn from the pneumatic tubes. With one of these exhausters a vacuum equal to a column of 23 inches of mercury was obtained with a less expenditure of steam than would be required to work a steam engine and pump to effect the same object. The principal recommendation of the steam exhauster, besides its extreme simplicity and the small space it occupied, was its cheapness of construction, as the cost only amounted to about one twentieth part of an engine and pumps. Up to the present time, so far as the public was concerned, the pneumatic tubes in London, Berlin and Paris, had only been used for the conveyance of telegraphic messages; but the British Post-office authorities had already considered the question whether it would not be advantageous to have the letter post service in London executed by means of pneumatic tubes. With such a system of distribution an accumulation of letters at principal offices would be entirely avoided.

Cheap Telegraphic Communication between England and America.

A MOVEMENT is on foot for the establishment of cheap telegraphic communication with America, and a copy of the following circular on the question has been addressed to the principal Chambers of Commerce throughout the United Kingdom:

"It is proposed that the Governments of Great Britain and the United States should purchase the existing cables and Newfoundland land lines, paying for the same in terminable annuities, and charging only such rates for the use of the cables as will meet the usual interest charge. For this purpose one fourth of the existing tariff would suffice for the present—that is to say, messages of ten words could be carried for ten shillings instead of £2. The gross earnings of the Anglo-American and French cables, including the share of receipts accruing to the Newfoundland Company, have now reached about £700,000 per annum, and this amount is earned with only one half of the available power being employed. The existing companies are earning, with £700,000 a year of gross receipts, about fifteen per cent. on their ordinary capital, after allowing a considerable sum for reserve. But, in view of the possibilities of competition, the shareholders would be content to dispose of their property without demanding exorbitant terms. It may be safely assumed that they would accept £150 for Anglo-American stock and £30 for French cable shares of £20 each. The land lines and cables of the Newfoundland Company can be acquired for about £800,000. The total cost of these lines, in the case of an immediate purchase by the Governments, would, on these terms, be less than £5,000,000. To provide for the increase of business resulting from a lower rate two additional cables ought to be laid from Ireland to Newfoundland, or Halifax, in Nova Scotia, and the land lines increased in proportion. The total outlay would then be about £6,400,000, and this could be obtained on the joint guarantee of the English and the United States Governments, by granting annuities of five per cent. for thirty years, on the expiration of which the cables would become free of all charge except maintenance. The annual sum to which the Governments would thus commit themselves would be £320,000. For this annuity they would have made over to them the three working cables, now earning £700,000 a year, with only one half of their capacity employed, two new cables and the connecting land lines. It has been found that with each successive reduction in rates the use of the telegraphs has enormously increased, as is evidenced from the fact that the earnings are now much greater with the rate at £2 than they were formerly at £29 per message. At one shilling per word, and with four cables out of the five constantly employed, the receipts would be £470,000; the expenses of all the lines, including repairs, would not exceed £100,000; leaving a balance of £370,000 to meet an annual charge, terminable in thirty years, of £320,000. It is apparent, however, that the reduction to one shilling per word would not be final, but that still further reductions might be made, and the number of cables increased, on the same plan of terminable annuities, without becoming any burden on the two Governments. The terminable charge for ten cables would be £485,000 a year, which would be earned by eight of the cables in working order, at the rate of seven pence per word, and so on until the cost of the annuities and cost of communication between the two countries would not be greater than the charges for internal communication.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Advice to Telegraphers.

Jan. 4th, 1872.

TO THE EDITOR OF THE TELEGRAPHIC.

I WISH us all a happy year—a year full of good purposes—full of good deeds.

I would kindly say to each one in the telegraph business, Remain where you are if you can possibly. Do not seek new positions in or out of the business. Your services are most valuable where you are most familiar with your work and all its surroundings. Should you be asked by your employers to fill places away from home or away from your favorite location, do so cheerfully, not because more pay is the inducement, but to accommodate the company; and do it with a proviso that you may return to your old place as soon as some one can be found to fill permanently the new place. Remember that the act of transplanting is injurious to the healthy growth of any tree. New posts ought to be filled by those who are at home at such posts. If there exist cases where the tree is benefited by transplantation, then remember the less selfish fact that perhaps many who loved its shade in summer, and felt its protection from the blasts of winter, will sorely feel its absence.

Also, to the hundreds who have conceived and smothered new modes of work, machinery, inventions of every kind, and who have felt it would be useless to attempt to have them brought into use, let me say

to them, Preserve your drawings, models, etc., they may become of value to you and to us all.

I feel that I can enjoy to make many sacrifices that the tone and standard of my chosen profession may be raised. But I ask no one to believe my words. If I do no works then am I unworthy of your confidence. A Happy New Year once more. * * *

Do we mean Talk or Action?

TO THE EDITOR OF THE TELEGRAPHIC.

THERE have been so many communications in THE TELEGRAPHIC, during the last three or four months, in regard to the feasibility and advisability of a new telegraphic organization, that it would seem as though there might be something done in that direction. So far, however, it seems to be "all talk and no cider," to use a homely but expressive phrase. If it is intended to do anything let us stop talking and go to work.

Almost all the correspondents seem agreed that something should be done, but no two coincide as to the shape which the organization should take. Your correspondent, who writes over the signature of " * * *," appears to have some sort of a plan worked out in his own mind, which is to revolutionize the relations between the Western Union Company and its employees, but as he has not favored us with the details, we are as yet in the dark whether it is a practical plan or merely a visionary scheme, wrought out in the mind of some speculative operator, and based upon impossible conditions. As far as I have been able to judge, from an attentive perusal of his several communications, there is nothing feasible in what he proposes.

While I am persuaded that combination is the only way in which telegraphers can effect anything, I must confess that I am not at all sanguine as to such a combination being effected. There is a manifest holding back and disinclination to take the lead in any such movement, which does not argue well for either the courage or the spirit of the telegraphic fraternity.

It seems to be supposed that any movement which we make must necessarily be antagonistic to the interests of telegraph employers, and be so regarded by them. This is all wrong. The interests of the employees and employers are or should be identical. Wherever and in whatever business these have worked in harmony, the result has been an increase of prosperity to all concerned. Whenever and wherever they have been opposed, the result has been detrimental to both. In this respect telegraphy is no exception to the general rule.

But I had no idea of writing a homily on the relations of labor and capital when I commenced. My purpose was merely to express sympathy with the idea of a combination, under some form, of telegraph employees, and to suggest that such a combination will never be effected merely by the publication of our communications in THE TELEGRAPHIC. If a commencement is to be made it must start somewhere and somehow. So far I see no indication of such a start being made.

UNION.

Personals.

Mr. H. J. BROSS has accepted a position as night operator with the Atlantic and Pacific Telegraph Company, on the Union Pacific Railroad, at Hilledale, Wyoming Territory, vice Mr. J. W. MORELAND, transferred to Sherman Station of the same Company.

Mr. B. F. DILLON is in the Western Union, Kansas City, Mo., office, taking press reports.

Mr. THOMAS P. WHEELER has resigned his position in the Kansas City, Mo., Western Union office, as press report operator, and accepted a similar position in Omaha, Neb., office of the same company.

Mr. DAN CREAMER retains the position of night manager of the Chillicothe, Ohio, Western Union office.

Mr. CHARLES CLEANER is night manager of the General Superintendent's office, Hannibal and St. Joe R. R., at Hannibal, Mo.

Mr. JAMES STACEY, an old time operator, is train despatcher of the Hannibal and St. Joe R. R., at Hannibal, Mo.

Mrs. L. E. MACKLIND, manager Western Union office, Hannibal, Mo., has gone home on a visit.

Miss LIZZIE A. TURNER, of Danbury, Conn., was the successful applicant for the situation of assistant operator in the main office of the Philadelphia, Pottsville and Reading Telegraph Company, at Shenandoah, Pa., which was noted as vacant in THE TELEGRAPHIC of Nov. 4th last.

The Telegraph.

Annual Meeting of the Atlantic and Pacific Telegraph Company.

THE annual meeting of the Atlantic and Pacific Telegraph Company was held on Tuesday, Jan. 9th, at one o'clock P. M., at the office of the Company in this City. There was an unusually large attendance of stockholders, and much interest was manifested. The report of the President was of an encouraging character, setting forth the situation of the Company, and stating the efforts which had been made to improve the business of the Company during the past year. The

financial statement showed an encouraging surplus over all expenses. The accounts for the year could not be fully submitted, as the returns for December were not all in. The Chicago fire reduced the receipts below what they would otherwise have been, and caused considerable additional expense, which prevented the showing of as large an amount of profit as might otherwise have been made.

The By-laws were unanimously amended so as to provide for the holding of the annual meeting in future on the fourth Tuesday instead of the second Tuesday in January. This change is made merely to allow time to prepare a full and complete statement of the business and affairs of the Company up to the close of the preceding year, instead of an incomplete one, as heretofore.

The following Trustees for the ensuing year were elected, there being no competing tickets. About 39,000 shares of stock, out of 50,000 outstanding, were represented and voted upon:

John Allen, Jr., Buffalo, N. Y.	William M. Lent, San Francisco.
Oliver Ames, Boston, Mass.	D. C. Littlejohn, Oswego, N. Y.
B. F. Allen, Des Moines, Iowa.	Levi P. Morton, New York.
Norman S. Bentley, New York.	John H. Mortimer, New York.
James Brooks, New York.	A. B. Meeker, Chicago, Ill.
John W. Brooks, Boston, Mass.	Henry M. Taber, New York.
C. S. Bushnell, New Haven, Ct.	S. H. Markes, Lockport.
Geo. Bliss, New York.	A. Nelson, New York.
Paul Cushman, Albany, N. Y.	W. Otis, Cleveland, O.
H. D. Walbridge, New York.	William D. Snow, Brooklyn, N. Y.
John Duff, Boston, Mass.	James Sayre, Utica, N. Y.
Sidney Dillon, New York.	W. J. Syms, New York.
James Emott, New York.	Josiah Snow, New York.
T. J. S. Flint, New York.	A. B. Stockwell, New York.
H. M. Flagler, Cleveland, Ohio.	E. D. L. Sweet, New York.
David A. Gage, Chicago, Ill.	John G. Vose, New York.
R. E. Graves, New York.	Horace S. Walbridge, Toledo.
C. M. Horton, Buffalo, N. Y.	S. U. F. Odell, New York.
J. N. Kinney, Cincinnati, Ohio.	A. F. Willmarth, New York.
	Wm. H. Guion, New York.

The new Board of Trustees will meet for the election of officers for the ensuing year in about two weeks.

Arrangements are being made which will liquidate the indebtedness of the Company, and supply the funds needed for making such additions to the facilities as are required to place the lines in position to work to the best advantage, and enable it to show a further increase of the business and profits in the future.

Foreign Telegraphic Notes.

THE Victoria (Australasia) Parliament has passed the copyright act, protecting press telegraphic despatches for twenty-four hours from being "pirated." The act is to remain in force for one year.

A novel obstruction to the spread of civilization in China is reported. A branch of the new system of cable telegraphy has actually been taken up and stolen by the Chinese. This is the very latest style of "ways that are dark and tricks that are vain" which we have had of the "heathen Chinese."

A Pleasant Celebration and Reunion.

ABOUT a quarter of a century ago William C. Buell opened the first telegraph office in this city, and for twenty-four years he was operator and business manager of the line here. Two years since he withdrew from the management of the Western Union office and entered upon business for himself as an insurance agent. Last night Mr. Buell celebrated his "emancipation" from telegraphy by providing a sumptuous feast in his office, and inviting large numbers of his friends, including telegraph operators, newspaper men and insurance agents, to share with him the happiness of the occasion. After the "eatings and the drinkings" there was a flow of sentiment and song, and all enjoyed what may be called a good time. Mr. Buell was particularly happy, fortune having smiled upon him in many ways since he dissolved his connection with telegraphing. It may here be stated, as a most interesting item, that Mr. Buell and another operator, named Johnson, sent the first public document over the wires that was ever communicated by telegraph. The feat was performed on the 1st day of January, 1847, and the document was Gov. Wright's message. Previous to this time the messages had been sent from Albany to New York by horse express—the relays being stationed ten miles apart. On this occasion the express was sent out as usual, the telegraph then being a novelty, and its ability to send so long a message untried. Messrs. Buell and Johnson despatched the message, which contained five thousand words, in two hours and thirty minutes, and when the expressman reached Hudson he was met by a telegram from New York saying that the message was in type there, and that he need not continue his course. This was the last of horse expresses for the rapid transmission of public documents, and the successful initiation of the

telegraph as a means of communicating them to the press of the country. Mr. Buell is the oldest ex-telegrapher in the United States, and though now engaged in more prosperous business, must look back upon his career, in connection with the invention which has almost revolutionized the world, with pride and satisfaction quite beyond the power of words to express.—*Troy Daily Times*.

Telegraph Operators Nonplussed.—Telegraphic Signaling and its Mortifying Results.

Two young men, telegraph operators, board at one of our leading third class hotels, and being of a somewhat hilarious disposition, find great amusement in carrying on conversation with each other at table by ticking on their plates with a knife, fork or spoon. For the information of those not familiar with telegraphy it may be well to state that a combination of sounds or ticks constitutes the telegraphic alphabet, and persons familiar with these sounds can converse thereby as intelligibly as with spoken words. The young lightning strikers, as already stated, were in the habit of indulging in table talk by this means whenever they desired to say anything private to each other. For instance, No. 1 would pick up his knife and tick off some such remark as this to No. 2: "Why is this butter like the offence of Hamlet's uncle?"

No. 2—"I give it up."

No. 1—"Because it's rank, and smells to heaven."

Of course the joke is not appreciated by the landlord (who sits close by), because he doesn't understand telegraphic ticks, and probably he wouldn't appreciate it much if he did; but the jokers enjoy it immensely, and laugh immoderately, while the other guests wonder what can be the occasion for this merriment, and naturally conclude the operators must be idiots.

A few days ago, while these fun loving youths were seated at breakfast, a stout built young man entered the dining room with a handsome girl on his arm, whose timid, blushing countenance showed her to be a bride. The couple had, in fact, been married but a day or two previous, and had come to San Francisco from their home in Oakland, or Mud Springs, or some other rural village, for the purpose of spending the honeymoon. The telegraphic tickers commenced as soon as the husband and wife had seated themselves.

No. 1 opened the discourse as follows: "What a lovely little pigeon this is alongside of me—ain't she?"

No. 2—"Perfectly charming—looks as if butter wouldn't melt in her mouth. Just married, I guess. Don't you think so?"

No. 1—"Yes, I should judge she was. What luscious lips she's got! If that country bumpkin beside her was out of the road I'd give her a hug and a kiss, just for luck."

No. 2—"Suppose you try it, anyhow. Give her a little nudge under the table with your knee."

There is no telling to what extent the impudent rascals might have gone but for an amazing and entirely unforeseen event. The bridegroom's face had flushed, and a dark scowl was on his brow during the progress of the ticking conversation, but the operators were too much occupied with each other to pay any attention to him. The reader may form some idea of the young men's consternation when the partner of the lady picked up his knife and ticked off the following terse but vigorous message:

"This lady is my wife, and as soon as she gets through with her breakfast I propose to wring your necks, you insolent whelps."

The countenances of the operators fell very suddenly when this message commenced. By the time it ended they had lost all appetite and appreciation of jokes, and slipped out of the dining room in a very rapid and unceremonious manner. The bridegroom, it seems, was a telegraph operator, and "knew how it was himself"—*San Francisco Chronicle*.

Miscellaneous.

ELECTRICITY EXTRAORDINARY.—The business of the W. U. telegraph office at this place has so greatly increased, that a messenger has been employed who is so full of life and electricity that you cannot touch any part of his clothing without emitting sparks of a very curious nature—even his boots appear to be infected with the wonderful phenomena.—*The Portchester Journal*.

LELAND'S GALVANIC BATTERY.—This invention has for its object to produce an electric battery which will operate continuously without requiring attention, as long as it remains provided with the requisite exciting substances. The invention consists in placing within the porous cup containing the platinum element sulphate of mercury, alone or mixed with black oxide of manganese, and in surrounding the cup with water, which is in contact with the zinc. This combination, it is claimed, produces reliable action, and is very economical, as the spent sulphate of mercury falls to the bottom of the cup in a shape to be readily reconverted.

The inventor states that, by connecting the poles of the platinum and zinc plates, a steady action is maintained until the sulphate of mercury is entirely decomposed and falls to the bottom of the cup as metallic mercury, ready to be reconverted into sulphate of mercury. This insures great economy.

This battery will, it is claimed, work weeks or

months without attention, except perhaps the filling up of evaporated water and the supply of sulphate of mercury. No acid being required, offensive fumes are avoided, and much steadier action is insured.

The improvement is the invention of Mr. Edwin J. Leland, of Worcester, Mass.

NEW USE FOR ELECTRICITY.—Electricity has achieved a new triumph. Already employed to restore vigor and nimbleness to the gouty limbs of decrepit *bons vivants*, the recent discoveries of Dr. Bernier, a French physician, show electricity to be an efficient remedy for the evil effects of excessive drinking on the human nose. The doctor maintains that, by the application of an electric current to noses, even of the most Bacchanalian hue, the flesh may be made "to come again as the flesh of a little child;" and he supports his assertion by a case performed on a female patient of his own—a woman of high rank.

MODIFICATION OF LELANCHE'S BATTERY.—M. Bouman, of Holland, has proposed some modifications of Lelanche's celebrated galvanic battery that are said by our exchanges to be of considerable value. In a flat bottomed glass jar a plate of gas carbon and a rod of amalgamated zinc are placed upright, a short distance apart. The intervening space and the surrounding parts of the vessel are then two thirds filled with the usual mixture of coarsely pulverized coke and black oxide of manganese. In order to prevent the zinc pole from coming in contact with the black mass, it is protected by a cover—a sort of muff—of woolen cloth. As soon as the coarse powder is in place, water is poured in until it rises a trifle above the surface, and a few crystals of sal ammoniac are laid in, which can be renewed as often as they disappear, as well as the water removed by evaporation. Lelanche produced the connection with the carbon plate by means of a covering of sheet lead, but as this was liable to oxidation, complete contact was often destroyed.

RELATIVE VALUE OF GALVANIC BATTERIES.—Count Moncel comes to the following conclusions, after examining the various forms of batteries in use: Of all the galvanic elements used in industry and the arts, those with bichromate of potass yield the greatest electro-motive force, are the most economical, and give off no irritating vapors; but are, on the other hand, not very constant, becoming strongly polarized. He commends the following batteries, but gives no description of them. The Delaurier element, the Chutaux element, and the Grenet element.

The January Magazines.

THE INDUSTRIAL MONTHLY.

This instructive and useful journal (formerly known as the *Technologist*), issued by the Industrial Publication Company, at 176 Broadway, New York, has just entered upon its third year.

The *Technologist* had achieved a reputation, position and success, such as is seldom realized by any publication of its class in so short a time. The change of title, while more fully expressing the character of the magazine, which is devoted to mechanics, manufacturing and engineering. Rural and city architecture, and improvements in all kinds of machinery and labor-saving devices, has also been accompanied by a marked improvement in its appearance. Such a journal is calculated to be of great value, pecuniarily and in an educational point of view, and should be liberally sustained. The articles are written and selections made with care, and many of them beautifully illustrated. Subscription price, \$1 50 per year. Single numbers, 15 cents.

THE AMERICAN JOURNAL OF SCIENCES AND ARTS.

The January number of *The American Journal of Sciences and Arts* is issued with the usual promptness, and well sustains its reputation as the leading scientific journal of the United States. In its new form as a monthly publication it seems to meet with the appreciation of those interested in scientific matters, and appears to be prosperous. Published by Professors DANA and SILLIMAN, New Haven, Conn., at \$6 per year. Single numbers, 50 cents.

THE NATIONAL SCHOOL FESTIVAL.

This is a quarterly magazine, devoted to dialogues, recitations, concert, motion, and other exercises for Sunday schools and day schools, exhibitions, concerts, etc.

It is filled with original matter of the above description, and, we should judge, would be of interest to scholars and teachers. Published by ALFRED J. SEWELL & Co., Chicago, Ill., at 50 cents per year; single numbers, 15 cents.

THE MANUFACTURER AND BUILDER.

The Manufacturer and Builder for January appears in a new dress, and its 32 quarto pages are well filled with valuable original and selected matter. It is, as usual, profusely illustrated with cuts, which are well executed, and it is in fact a very handsomely printed periodical. An illustrated article on "Attempted Improvement in Telegraphic Electro-Magnets" will interest telegraphers.

The connection of Western & Co. with the publication of the *Manufacturer and Builder* ceases January 1, 1872. The magazine will hereafter be published at the same address by its proprietors, the Engineers and Manufacturers' Publishing Co. All communica-

tions relating to the business of the concern should be addressed, and all remittances made to Austin Black, Secretary and Treasurer, 37 Park Row, New York. P. O. Box, 4,379. Subscription price, \$2 per year.

PHRENOLOGICAL JOURNAL.

The *Phrenological Journal* commences the new year and its fifty-fourth volume together. It makes an excellent commencement of both. It gives an excellent likeness of ELIHU B. WASHBURN, United States Minister to France, and a very good phrenological description of his character. Among the other attractions of the present number are the following articles: What Can I Do Best? Cheerful Giving; Joseph P. Thompson, D. D., late of the Broadway Tabernacle Church; Expression, Its Anatomy and Philosophy; "Sol" Smith Russell, or some Studies in Facial Caricature; Passages from Dyak Life; Only a Head, or "Not a Cent in the World," a chapter of mishaps; "Taking Cold," or the Causes and Remedy of Colds; Our Objects; Political Economy not a Failure; William N. Byers, the Rocky Mountain Printer; Intercommunication; Great Fires of Ancient and Modern Times; Influence of Forests on Climate. Numerous illustrations are given. Price, \$3 a year. Single Nos. 30 cents. Address, S. R. Wells, New York.

New Patents.

For the Week ending Dec. 26, 1871, and each bearing that date.

No. 122,266.—ELECTRO-MAGNETIC APPARATUS. George Little, Rutherford Park, N. J.

1. An oscillating armature and two helices connected to the main line, in combination with a local circuit connected with one of the helices, substantially as and for the purposes set forth.
2. An oscillating armature upon a fulcrum connected with the cores of two electro-magnets, in combination with two electric circuits connected with the helices of such magnets, substantially as and for the purposes set forth.

3. The screw-rod *k* of the rheostat, combined with the adjuster *A* and coil *c*, to regulate the position of said adjuster, substantially as set forth.

No. 122,267.—RHEOSTAT OR RESISTANCE COIL. George Little, Rutherford Park, N. J.

The conductor *k*, sliding block *m* and spring *o*, in combination with the coil *c*, heads *a* *b*, and bar *t*, substantially as and for the purposes set forth.

For the week ending January 3, 1872, and each bearing that date.

No. 122,389.—APPARATUS FOR LIGHTING GAS BY ELECTRICITY. William Klinkertues, Göttingen, Germany.

1. The gas lighting apparatus composed of a battery whose exciting liquid serves to shut off the gas escape and to yield to increased pressure of the gas, substantially as herein shown and described.

2. The tube *e*, suspended from the cover *a* of the vessel *A* into the exciting liquid, and provided with the enlargement *c* at the lower end, substantially as and for the purpose herein shown and described.

3. The thimble *C*, placed over the gas supply pipe *B* and within the tube *E*, substantially as herein shown and described.

4. The combination of the galvanic plates *F* and *G* with the tube *E* and vessel *A*, all so arranged that the liquid in *A*, when in its normal position, will not be in contact with one of said plates, as set forth.

5. The vessel *A*, pipe *B*, thimble *C*, and tube *E*, combined with the galvanic plates *F* *G*, electrodes *H* *I*, and platinum wires *g*, substantially as herein shown and described.

No. 122,437.—ELECTRO-MAGNETIC APPARATUS FOR NOTING METEOROLOGICAL CHANGES. Stephen Chester, Elizabeth, N. J.

1. An automatic apparatus, operated by electro-magnetism or electricity, for indicating at a distance meteorological and other varying phenomena.

2. I claim a current changer, consisting of a revolving cam operated by clock work, bearing successively against a series of plates connected with the different branches of an electric circuit, as and for the purpose set forth.

3. I claim an apparatus transmitting currents of electricity, during a certain unit of time, corresponding in intensity to the variations from a fixed point during said time, of instruments indicating meteorological and other varying phenomena, as and for the purpose set forth.

4. I claim an apparatus causing electrical impulses to be transmitted during a certain unit of time corresponding in number to the variations of instruments during said time from a zero point, indicating meteorological and other varying phenomena, as and for the purpose set forth.

5. I claim a combination of the commutator, a single battery, instruments indicating meteorological and other varying phenomena, substantially as described.

No. 122,473.—AUTOMATIC TELEGRAPH INSTRUMENT. George Little, Rutherford Park, N. J.

1. The swinging brush *s* and catch-finger *t*, combined with the arm of the transmitting device, substantially as set forth, and for the purposes specified.

2. The arrangement of the transmitting and receiving devices and the electric connections, substantially as specified, so as to employ the barrel *g* and trough *m* for the paper in either transmitting or receiving, as set forth.

3. Two transmitting rollers or disks, *e*, arranged upon separate spring-arms, so as to act in connection with a strip of paper having perforations in two lines, substantially as set forth.

Recent British Patents.

No. 1,238.—E. G. Bartholomew, Frederick street, Hampstead road, Middlesex.—SIGNALING BY ELECTRICITY. Dated May 9, 1871.

This consists in making an electrical contact by a subsidiary needle or armature, acted upon by the main coil, coils or electro-magnet, whereby a local battery acts to increase the effect of the line current; also, in breaking the said contact by the main needle, or some other suitable arrangement, brought into action thereby.

No. 1361.—W. E. Newton, office for patents, 66 Chancery lane, Middlesex. ELECTRO-MAGNETIC ENGINE. Dated May 20, 1871.

A wheel of magnets is placed within a circular series of armatures or magnets, the one arranged eccentrically to and having a rolling motion around the other, and rotary motion about its own axis.

Married.

WALKER—BRADFORD.—At the residence of the bride's father, Mr. J. T. Bradford, Quincy, Illinois, Tuesday, December 19th, 1871, by Rev. W. S. Hooper, Mr. GAVEN F. WALKER, manager of the Atlantic and Pacific Telegraph office, and Miss M. ELIZABETH BRADFORD, all of that city.

THE TELEGRAPHIC

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.

FRANK L. POPE, Associate Editor.

SATURDAY, JANUARY 13, 1872.

The Further Development of Telegraphy.

THE postal telegraph scheme having been practically disposed of, at least for some time to come, the field is clear for the further development of telegraphy in this country through private enterprise. We, last week, attempted to show why, even at the comparatively high rates charged for telegraph service here, the lines were non-dividend paying—the expenses of one kind and another eating up most, and frequently more than all of the receipts. This state of things should not and need not exist. If the telegraph business were properly conducted it might be made profitable, even at less than the existing rates of charges. Our next neighbor, Canada, makes her telegraphs profitable to the stockholders, even at a uniform charge of 25 cents. Both the Montreal and the Dominion Company are now paying dividends—the former ten per cent. and the latter five per cent. on the par value of the shares, with business constantly increasing and becoming more valuable—at the same time the lines are being extended and increased largely every year. It is true they have advantages, as was stated last week, in the lower price of labor and material, and the more uniform climate over most of the territory—a climate which, for a considerable portion of the year, renders insulation a secondary consideration.

On the other hand, to offset these advantages, in the States there is a much larger relative amount of telegraph business crowding upon the lines constantly, and were they made prompt and reliable, as they might be, this pressure of business offering would be largely increased.

The much abused and denounced Associated Press monopoly originated and is sustained from the fact that wealthy and enterprising newspapers find the telegraph facilities inadequate to supply them with individual and exclusive reports. Were telegraph facilities ample, the Associated Press combination could not exist in its present shape for six months. Until they are ample and reliable it must exist substantially as a monopoly, and all the intriguing and contriving cannot alter the fact. This is but one illustration of the business which would flow to telegraph lines if it could be properly transacted. The argument that under Government management this would be improved is fallacious. Were all the lines placed in the hands of Government officials, and a monopoly of the business legally established, as it must be in that event, the condition of the telegraphs would be much worse and more inefficient than it is now.

In a business which should be conducted on exact principles, and with an intelligence which could accurately calculate and predict results, there is less actual ability and intelligence employed than in almost any other. There should be no excuse for the failure of a telegraph enterprise in this country to realize pecuniary success. The failures should be the exception instead of the rule, as has been the case up to the present time.

The future development of telegraphy should be in the direction of securing these favorable results. Persons who are solicited to take stock in telegraph companies should not blindly accept the statements and figures of interested promoters; they should not abandon the entire management and control, in the first place, to contractors, who may approach them with schemes already matured, and which present hypothetical profits on paper for the subscribers, and actual and enormous profits for themselves, in fact. They should inform themselves of what a really first class line is, and not accept strings of rickety poles, inferior and diminutive wires, and cheap glass insulators as fulfilling the requirement. Such lines are not first class, and never can pay anybody but the con-

tractors. The time for constructing such abortions, and calling them telegraph lines, is, or should be, passed.

There is another hallucination which interferes materially with the prosperity of telegraph companies, which must be got rid of—that is, the belief that stock which is issued originally at from 20 to 40 per cent. on its nominal value is, or likely to be worth par, or pay dividends. When an enterprise is established and paying large dividends it may sometimes be policy to water the stock, but it would seem as though the slightest reflection might satisfy any reasonable person of the absurdity of expecting any profit or advantage, by *bona fide* subscribers, to stock in an inchoate enterprise on such a basis; yet this is what has been done with the stock of almost every telegraph company organized in the United States. Besides this inflation large amounts of stock are issued to the originators and promoters for which practically nothing is paid, and which has no foundation in actual investment. Thus the company starts out with wires incompetent to earn dividends, or even a reasonable amount of capital, under the most favorable circumstances, and this is loaded down with from 60 to 75 per cent. of nominal capital, which never had any actual existence.

These little games have been played over and over again until the public is becoming weary of being thus humbugged, and it becomes more and more difficult to obtain the means for telegraphic enterprises.

If, then, we are to expect any further development of telegraphy in this country, there must be a radical reform in the method and principles of organization of telegraph companies, and in the material, construction and management of telegraph lines.

With these secured, tolls can be reduced, lines become reliable and profitable, employes receive adequate compensation, and the telegraph become more useful and indispensable to the public.

The Dominion Telegraph Company.

MR. A. A. COLBY, of the Dominion Telegraph Company of Canada, has been in the city during the present week, and has favored us with a call. He reports the Dominion Company to be in a flourishing condition, with a remunerative and increasing business. The company now has over 1,500 miles of poles, and over 3,000 miles of wire in operation. During the last year over 600 miles of line were added to its previous facilities.

A dividend of five per cent. on the stock was made and paid out of the earnings on the 24th of December. The stock is now selling at par. Considering the circumstances and difficulties encountered, this is an excellent record for so young a company.

It is expected that the company will construct, during the present year, about 700 miles of additional line.

The American Fire Alarm Telegraph.

Messrs. GAMEWELL & Co. present, in our advertising columns, an extended advertisement of their *American Fire Alarm and Police Telegraphs*, which is worthy the attention of all persons interested in securing the protection which is afforded thereby. There is no doubt of the truth of the statements made in this advertisement. For about twenty years this system of Fire Alarm Telegraph has been in operation in this country, and has met with universal approbation and commendation from all who have had an opportunity to witness its working. Since its first introduction in Boston it has been greatly simplified and improved, and GAMEWELL & Co. are constantly adopting such improvements as may be devised, which will add to its advantages and increase its efficiency, reliability and economy. Their automatic system makes it available for smaller cities and towns, where a regular Fire Alarm establishment, like those of Boston, New York and other large cities, would be too expensive, and it works perfectly.

We have frequently had occasion, in the columns of THE TELEGRAPHIC, to express our opinion of GAMEWELL & COMPANY'S Fire Alarm Telegraph, and can only reiterate what we have heretofore said in regard to this most valuable system. The people, municipalities and the press, have concurred with us in this matter, and are alike earnest and enthusiastic in its appreciation.

Secretary Scudamore a Criminal Violator of Law.

THE following extract, from a communication of G. W. S., the London correspondent of the *New York Tribune*, indicates that Mr. SCUDAMORE, the Postal Telegraph Manager of Great Britain, in intercepting the Manchester despatch to the *London News*, in regard to the telegraphers' strike, not only committed a "grave offence," but was "guilty" of a violation of law, punishable by imprisonment.

This may be considered worse than even the "offence" of the strikers, who certainly violated no statute law, even if their action—as Mr. SCUDAMORE, in his manifestoes, states—deserved to be "visited with very severe punishment," viz., dismissal from service, and starvation. We do not envy Mr. SCUDAMORE, or the Postmaster General, in whose name he acts, their position when Parliament meets.

"A correspondent has brought out the fact that Mr. Scudamore, in recently intercepting telegraphic despatches, committed an offence not merely against morals and decency but against the law. The Telegraph Act, under which the Government acquired the lines, provided that anybody in the Post-office who should, contrary to his duty, disclose or intercept any message, shall be deemed guilty of a misdemeanor, and upon conviction, be subject to imprisonment for a term not exceeding twelve months. Under that Act I do not see why Mr. Scudamore may not be tried and sent to jail like any other offender. If an officer of a private company had done a like thing, dismissal would have been the certain penalty, and, in so aggravated a case, prosecution would almost certainly have followed. In a Government officer the guilt is far greater, but I suppose we must wait till Parliament meets before so much as a complaint would have a chance of being listened to. Possibly somebody may say that Mr. Scudamore, when he read and delayed a newspaper despatch, was not acting 'contrary to his duty,' but in pursuance of it. If that is to be the defence it must be stated in Parliament, and if stated, the Government of which Mr. Scudamore's chief, the Postmaster General, is a member, must either adopt or repudiate it. I will undertake to say that either the Government or any single minister who ventured to adopt it would be driven out of office with hootings before twenty-four hours were over. But the fate of Sir James Graham is too fresh in Ministerial minds to permit such a blunder as that. Mr. Scudamore's insolent interference will be disavowed, and I suppose some sort of excuse will be made for keeping him in office."

Prosperity of an Ex-Telegrapher.

MR. WM. C. BUELL, of Troy, N. Y., well known for several years as an able, popular and successful telegraph operator and manager, has engaged in the real estate, insurance and loan business, at No. 26 River street, with Messrs. WM. C. HART and J. W. WINSTON, under the firm name of Hart, Buell & Co. Mr. BUELL'S numerous telegraphic friends and acquaintances will be pleased to learn that he is prospering, and likely to achieve success in his new undertaking.

Telegraph Colleges Once More.

WE are lately in receipt of the circulars of several telegraph colleges or institutes (so called), which have recently been issued, and which are filled with the usual truthless and extravagant statements and promises to attract customers. One of these is located in St. Louis, and its circular—which, by the way, is significantly without the names of any parties in connection with its proprietorship or management, either responsible or otherwise—is a pack of lies from beginning to end. We have so often exposed the lying pretensions and promises of these concerns that we are weary, as we have no doubt most of our readers are, also, of the constant reiteration of the facts in connection with them. It is safe to conclude that they are mainly arrant swindlers.

INTERNAL RESISTANCE OF VOLTAIC BATTERIES.—W. Beets, by the use of a compensating battery, has obtained and compared the resistances and electro-motive forces of various hydro-electric elements with great exactitude, and from these data has calculated the electro-motive force of various arrangements of Voltaic batteries. Thus, taking a cell of Daniell's battery as 1, the electro-motive force would be, according to his data:

1 Bunsen.....	equal 1.799 Daniells.
1 Grove.....	" 1.684 "
1 Stoecker.....	" 1.272 "
1 Le Clanche.....	" 1.167 "
1 Meidinger.....	" 0.849 "

AMERICAN FIRE ALARM AND POLICE TELEGRAPH.

GAMEWELL & CO., Proprietors,
104 CENTRE STREET, NEW YORK.

J. W. STOVER,
General Agent and Superintendent.
L. B. FIRMAN, Chicago, Ill.,
General Agent for the North and North West.
J. R. DOWELL, Richmond, Va.,
Special Agent for Virginia and North Carolina.
J. A. BRENNER, Augusta, Ga.,
Special Agent for Georgia and South Carolina.
L. M. MONROE, New Canaan, Conn.,
Special Agent for New England.

THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,
WITH A CENTRAL OFFICE,
OR
UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is
made for evidence of its great

SUPERIORITY, VALUE
AND
UNIFORM RELIABILITY.

Albany, N. Y.,
Alleghany, Pa.,
Boston, Mass.,
Bridgeport, Conn.,
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Baltimore, Md.,
Chicago, Ill.,
Cincinnati, Ohio,
Columbus, Ohio,
Cambridge Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
Washington, D. C.,
Worcester, Mass.

The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the
apparatus may be distributed in a combination of circuits, and
the entire system successfully worked, without the constant per-
sonal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers,
adapted to produce the full tone of the largest church or tower
bells.

Fourth—The Electro-Mechanical Gong Striker,
for hose and engine houses, by means of which the location of
the fire is instantaneously communicated to the members of
each fire company.

These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System
OF
FIRE ALARM TELEGRAPH
IN THE WORLD.

It is a sufficient vindication of the claims which are made by
the Proprietors of these systems of

FIRE ALARM AND POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of
practical use, and that the efforts which have been repeatedly
made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to
adopt other systems having demonstrated their insufficiency
and unreliability, and resulted in their abandonment, and sub-
stitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the
original FARMER & CHANNING PATENTS, one of the most
important of which has just been extended for seven years, and
during the past seventeen years have spared no expense or effort
to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have
adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little ex-
pense, compared to the benefit which it confers, that even small
communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POS-
SIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruc-
tion, and the number of lives which have been preserved
through the general adoption of this system, throughout the
UNITED STATES and the DOMINION of CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for
any considerable length of time, they have been enormous, THERE
CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its in-
troduction into their localities is cordially invited, and
their efforts will be duly appreciated and
compensated.

Any information desired in regard to the above
system will be cheerfully and promptly furnished
upon application at the office.

A pamphlet, setting forth more fully its advantages and su-
periority, has been printed, and will be supplied to Municipal
Authorities and others interested in Fire Alarm and Police Tele-
graphy, upon application as above.

CHESTER, PARTRICK & CO., TELEGRAPHIC AND ELECTRICAL ENGINEERS, CONTRACTORS, etc.,

38 South Fourth Street, Philadelphia,
Manufacturers of and Dealers in every variety of
TELEGRAPHIC AND ELECTRIC APPARATUS AND SUPPLIES.
Contractors for the Construction, Repair and Maintenance of
TELEGRAPH LINES,
and for the introduction of

IMPROVED BURGLAR ALARMS,

AND

CHESTER'S PATENT ELECTRICAL HOTEL ANNUNCIATOR.

Also, Agents for the

Wilson Patent Electrical Gas Lighting Apparatus,
FOR
CHURCHES, THEATRES AND PUBLIC BUILDINGS.

Among other Telegraphic Material and Supplies constantly
kept on hand, for which orders will be promptly filled on receipt,
may be mentioned

GALVANIZED IRON WIRE,

All sizes.

COMPOUND WIRE,

for River Crossings and Long Stretches. Silk and Cotton Covered
Insulated Wire, all sizes. Office Wire of every description.

BLASTING APPARATUS, CARTRIDGES, BATTERIES, &c., &c.
CALCIUM LIGHTING APPARATUS.

MEDICAL BATTERIES,

INDUCED AND DIRECT CURRENTS.

ELECTRO-PLATERS' BATTERIES AND MATERIALS.

ELECTRO-GONGS, OF ANY DESIRED SIZE OR WEIGHT.

ALARM APPARATUS.

THE NONPAREIL TELEGRAPHIC APPARATUS,

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TELEGRAPHIC LEARNERS, AMATEURS AND SHORT LINES.

Also, Registers, Relays, Sounders, Keys, and every description
of Batteries, for Telegraphic use.

They guarantee to give satisfaction to all who favor them with
orders, in the promptness of execution, and in the quality of
articles supplied.

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Presents the most elegant appearance, is the most progressive
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DEALER IN ALL KINDS OF
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A VERY NICE SMALL SOUNDER SENT C. O. D.

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POPE'S NONPAREIL APPARATUS FOR LEARNERS.

Also,

D. W. PUTT & CO.'S MECHANICAL INSTRUMENT.

M. A. BUELL,
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Cleveland Ohio.

TELEGRAPH WIRE.**CHARLES T. CHESTER**

Desires to call the attention of

Telegraph Companies and Line Builders

To a new article of

TELEGRAPH LINE WIRE

OF

Unequalled quality and uniform excellence.

While great care and attention has been given to instruments and insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European governments, only fit for fencing purposes. Many tons of such material now remain here utterly unsaleable and unfit for use.

The able men who by their researches in Electricity, have solved the problem of Telegraphy through thousands of cable miles, have not neglected the subject of aerial lines, and their labors have fixed for Europe a standard of excellence, and means for preserving it, far exceeding that with which we have been hitherto content.

We extract from the minute and specific details a few of the requirements of a

STANDARD GOVERNMENT WIRE.

1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable, and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated, as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be coiled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications

A BREAKING STRAIN OF 1,260 POUNDS

for No. 8 wire is called for, and a capability of

Twisting upon itself 18 times

without rupture in a length of six inches.

Being convinced, from a long experience in construction of lines and sale of wire, of the necessity of this rigorous and faithful system of test applied uniformly, and to every bundle of wire sold by us, we have made complete arrangements to supply, and now offer for sale

This uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market.

We shall designate it by the Trade Mark,

CHESTER, A 1,

and our customers ordering it may be sure of receiving an article always uniform and always the very best.

The capacity or endurance of No. 9 is

21 to 23 twists upon itself,

in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

COMPARATIVE AND COMPETITIVE TESTS

with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 29. The omission of the elongating process would increase the flexibility and the tenacity.

Although the Wire has been

PROVED IMMENSELY SUPERIOR

to that commonly sold, its price will closely approximate to that of the inferior article.

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TELEGRAPH LINE WIRE.****COPPER FOR
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ENGINEER TO THE

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The Telegrapher

A Journal of Electrical Progress.

Vol. VIII.—No. 22.

New York, Saturday, January 20, 1872.

Whole No. 288

Original Articles.

Improvements in the New York Office of the Western Union Telegraph Company.—A Magnificent Operating Room.

It is but a little more than ten years since the general office of the different telegraph lines centering in New York was removed from the somewhat contracted quarters, which it had for many years occupied at 21 Wall street, to the large building at the corner of Broadway and Liberty street, where it is still located. The main operating room was at first established on the ground floor, in the rear of the receiving department, while the Western wires, at that time belonging to the New York and Buffalo Company, were accommodated in a pleasant office on the third floor. In 1867 the number of wires and the amount of business transacted had increased to so great an extent, that it became imperatively necessary to reconstruct the entire internal arrangement of the office, in order to furnish the needful facilities for the prompt despatch of messages. The main operating room was accordingly removed to the fourth floor, and a number of other minor changes made, which were fully described at the time in the current volume of THE TELEGRAPHER. Although less than five years have passed since then, the same causes have compelled still another removal of the main operating department to a spacious room on the fifth floor of the building, formerly occupied by the janitor's apartments and battery room.

The transfer of the operating force and the entire business of the office from the old operating room to the new one was successfully accomplished on Thursday, January 11th, at four o'clock P. M., in the presence of the officers and Executive Board of the Western Union Company and a number of representatives of the press, and others who had been invited to witness the proceedings. Every needful preparation had been made, and the change was effected almost instantly, without any interruption whatever to the business.

As soon as the transfer had been effected the work of the office was stopped for a few moments, while President Orton addressed the employees present as follows:

Gentlemen—I take this occasion, now that all are comfortably seated in this new and elegant apartment, to return thanks, in behalf of the company, to the General Superintendent, the Superintendent, the Managers, and all who have in any way aided the completion of these beautiful and unique arrangements. They are the result of twenty years' experience in the development of the telegraph system of this Continent, and typify the skill so far attained. What another twenty years will develop time can alone reveal, and for it we must wait.

To those who perform the toll connected with the service of this apartment I desire to say that I trust all will see, in these arrangements and in the beauty and comfort of this room, the design of the officers of this company to do all that can be done for the welfare of those who serve them. If, gentlemen, you will in future give us the vigor, and cheerfulness, and the skill which has marked your past service, I feel assured that we shall together build up a telegraphic system of which we shall all feel proud, which shall abundantly satisfy the public demands, and make it so proper a trust that even the Government will refuse to take it from our control.

At the conclusion of Mr. Orton's appropriate remarks the customary business of the office was resumed, and everything proceeded as usual.

The new operating room is a spacious apartment, 109 feet in length by 28 in breadth, and about 12 feet in height. When viewed from the entrance at the western or rear end of the building the *coup d'œil* is effective and beautiful. The long parallel ranges of operating tables—the industrious operators clustered about them, busily engaged in transmitting and receiving messages—the nimble-footed office messengers hurrying too and fro, and the continuous rattle of more than a hundred instruments, make up a scene of busy activity such as is not often seen, even in this busy age. The most casual observer cannot fail to notice, at first sight, the extreme neatness and good taste in arrangement and ornamentation which prevails throughout, even in the lesser details. The walls are colored with a soft neutral tint, very pleasing to the eye, the window casings being grained in black walnut. The operating tables are uniform in size and design, finished in chestnut and black walnut, and surmounted with elegant nickel-plated gas standards, with porcelain shades. The room is thoroughly well lighted, not only by a range of fourteen windows on the north and east sides, but by a capacious skylight

in the ceiling, extending the whole length of the room, which also serves as a most efficient ventilator. Perhaps the principal feature of the room, in an artistic point of view, is the switch, which is placed upon the front of a handsomely designed enclosure of black walnut, twelve feet in length by three in depth, placed against the southern wall, midway of the length of the room. Above the switch is hung a frame containing finely executed photographic portraits of the General Superintendent, surrounded by all the District Superintendents of the Eastern Division, and flanked on either side by large and excellent likenesses of President Orton and the venerable Professor Morse.

The switch itself, though of exceedingly simple design, is constructed and finished with the utmost elegance. It is of the compact and convenient form known as the "peg" switch, and is divided into three sections, intended respectively for the Eastern, Southern and Western circuits. Each section contains forty-four upright straps, and will accommodate an equal number of wires, or 132 wires in all—the whole forming the most extensive switch-board in America, if not in the world. It is twelve feet in length by three in height, and contains no less than 16,000 pieces. A tastefully designed canopy of black walnut surmounts it, while its base is surrounded by a counter of the same material, upon which stand four sets of instruments, so arranged as to be converted at will into two sets of button repeaters. Beneath the lower ends of the vertical straps on the switch-board are placed a corresponding number of spring-jacks, one for each line wire, into which are inserted the wedges carrying the instrument wires, loops, etc. The spring-jacks are nickel plated, and the designating numbers of the circuit is engraved upon an ivory plate and affixed thereto.

Through a cupola on the roof all the line wires are brought into the operating room. These are distributed as follows:

From the East.....	21
" West, via Albany.....	20
" " " Erie R. R.....	8
" South.....	39
Long Island.....	1
N. Y. City and suburbs.....	30
Branch and "short" wires.....	12
Auxiliary offices (50 loops).....	100
Total.....	231

These wires, each carefully separated from the others, and numbered and ticketed, are brought from the cupola through a double set of lightning arresters to a ledge near the floor, within the enclosure in the rear of the switch, and are thence led through the spring-jacks at the bottom of the switch, where the instrument wedges are inserted, and thence to their respective straps upon the switch, where they connect with the battery wires, which are attached to the horizontal straps of the board.

Gutta percha covered copper wires, made up in cables of eight wires each, carefully enveloped in tarred canvas, lead the main circuits from the instrument wedges at the switch, beneath the floor, to the operating tables, each table of four instruments having its own distinct cable; similarly, a five wire cable, carrying four local battery wires and one return wire, leads from the battery room to each table—the whole forming a most admirable and effective arrangement for accomplishing a result which has usually been found to present many serious difficulties.

The operating tables, twenty-eight in number, are arranged in three rows, running the whole length of the room, and are placed about five feet apart. They are six feet by four in size, and divided by vertical semi-transparent glass screens into four compartments, each accommodating a set of instruments, and affording space for four operators to work conveniently, without any interference with each other. A single Argand burner, with a porcelain shade, furnishes an abundance of light to each table, being placed at the intersection of the cross partitions. A small printed card, affixed to each compartment, gives a list of the offices with which that instrument is in direct connection, for the guidance of the office messengers in the discharge of their duties.

Opposite the switch, on the north side, and midway of the length of the room, is placed the managers' desk, provided with a set of instruments, which can be placed in instant connection with any circuit in the

office. Beside him an enclosure of plate glass will contain the testing instruments, consisting of a Siemens Universal Galvanometer and a Varley Differential, with resistance coils. In front of the manager's desk, and in the centre of the room, are arranged the automatic repeaters, of which there are four sets of the Hicks-Milliken variety, and two button repeaters, used respectively for duplicating Eastern and Western press reports on different routes.

Six combination or Phelps type printing instruments are arranged in a line on the south side of the room, and driven by steam power. Heretofore these machines have been rotated by manual power, a class of officials facetiously termed "grinders" having been employed for this purpose since the first introduction of printing instruments. But "Othello's occupation's gone." No more will these modern Ixions be chained to the perpetual wheel. Two of them, Finnegan and Davis, in view of long and faithful service, are still retained in other capacities in the company's employ. The former has labored at the crank continuously for twenty-two years, and has ground out during that time a printed strip which, if continuous, would reach 1,400 miles—or say from New York to Omaha. Davis was first engaged by the present Editor of THE TELEGRAPHER, then manager of the New York office of the Boston House line, at 21 Wall street, in 1853—nineteen years ago—and he has stuck to his monotonous task from that day forth with the persistence of an "Italian exile." The uniform and continuous speed obtained by the use of steam power is found to greatly improve the working of the instruments. Their usual rate of speed is about 180 revolutions per minute, and they turn out an average of 500 messages a day per instrument.

On the south side of the room, between the switch and the printing instruments, is an enclosure surrounded by a counter, for the use of the assorting clerks. The messages taken in at the receiving desks below are shot through a pneumatic tube, terminating in this enclosure. Other similar tubes bring the messages from the ladies' operating room, the cable room, and the office of the Associated Press. These, as they arrive, are assorted by ten clerks, who deposit them in plate glass receptacles in front of the counter, whence they are at once taken and distributed to the proper instruments by the office messengers. Two copying presses, composed of cylinders continuously revolving by steam power, are connected with this department, and each inward bound message coming from the operating tables is passed between the rollers, in contact with a sheet of moist copying paper, instantly producing a *fac-simile*, which is filed away, ready for future reference, if necessary. The original message is then provided with a delivery number, and thrown into a drop tube leading to the delivery department below, or to the city department, as the destination of the message may require.

The main operating room contains—

- 98 sets of Morse instruments.
- 4 " Automatic repeaters.
- 4 " Button repeaters.
- 3 " Duplex instruments.
- 6 Combination printers.

The above being the equivalent of 126 single instruments. The duplex instruments are Stearn's patent, for working in both directions at the same time on a single wire, which are being quite extensively used by the Western Union Company. Those now in use connect with Boston, Albany and Buffalo. The latter will soon be arranged to work direct to Chicago, and others added between New York, Philadelphia, Washington, etc., etc.

From this office quite a number of long circuits are worked direct, among which are four Chicago wires, two Cincinnati, one Cleveland, one St. Louis, two Pittsburg, two Buffalo. Eastward there are three cable circuits (two to Plaster Cove and one to Duxbury) and six Boston, besides one duplex—equivalent to two more. Southward there are one New Orleans, one Chattanooga, one Charleston, one Augusta, one Richmond, two Philadelphia (printers), one Washington (printer), and one duplex, besides three to six Congress wires during a portion of the day.

The resistance of the relays in use in this office varies from 100 to 135 Ohms; most of them are about 116 Ohms. The operating room is warmed by hot water pipes,

which diffuse a gentle and agreeable heat throughout the apartment. In addition to the lights on the operating tables, the switch and its surroundings will be illuminated at night by a splendid sunlight reflector, placed in the ceiling directly above it.

The ladies' operating room is on the third floor of the building. It is a cheerful and pleasant apartment, and contains eleven operating tables, similar to those in the main operating room. Thirty metropolitan or city wires and seven railroad and way wires are worked from this room. It is connected by pneumatic and speaking tubes with the receiving department and main operating room. The city wires do not enter the large switch in the main operating room, but are carried direct to a smaller one on the west wall, which is arranged to accommodate fifty wires with the necessary battery connections. Seven loops are conducted to the city operating room from the main switch. The cable room is also provided with eight loops, and the commercial news room with fourteen. Five instruments are now worked in the cable room.

Mr. A. S. Brown remains, as heretofore, the manager of the office. His executive ability and fitness for his position are unquestioned, and it is pleasant to know that he is at the same time respected and esteemed by the large force of employees under his charge.

Mr. A. S. Downer is general circuit manager, and has charge of the office in the absence of Mr. Brown. He is a veteran in the business—has every ramification of the vast network of wires converging in New York at his fingers' ends. He is one of the indispensable.

D. R. Downer, Gerrit Smith and S. H. Edwards are the day chief operators of the Eastern, Western and Southern wires, respectively. They have seen many years of faithful service, and need no introduction on this occasion.

Thos. Dolan is night manager, assisted by W. K. Applebaugh and C. S. H. Small, night chief operators—the former taking charge of the Eastern and Southern and the latter the Western circuits.

The number of operators, including the night and day force employed in the main operating room, is 94.

The ladies' operating room is under the supervision of Miss Lizzie H. Snow, manager, assisted by Miss Frank Daily. Thirty-five ladies are employed as operators in this department.

The average number of messages sent and received in the main operating room is about 16,500 per day.

The printing instruments, copying presses, pneumatic tubes, ventilators, etc., are operated by means of a beautiful five horse power Baxter engine, situated in the basement.

The elegant and thorough manner in which the details of this work have been executed, reflect great credit upon the accomplished mechanic under whose immediate supervision it has been done, Mr. Bateman Cates, of Boston.

Taken altogether, this is probably the handsomest, as well as the most complete and well appointed operating room in the world. No pains, skill or expense have been spared to promote the convenience, comfort and health of the numerous employees, and, beyond a doubt, the money expended will be returned with interest in the increased value of services rendered. It is, indeed—as Mr. Orton happily remarked—the result of twenty years of experience in developing the telegraphic system of this continent, and testifies the skill thus far attained. It is at once worthy of the great corporation it represents and of the metropolis in which it is situated.

F. L. P.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Pleasant Surprise to a Retiring Manager.—Telegraphic Notes and Notions.

WASHINGTON, D. C., Jan. 16.

TO THE EDITOR OF THE TELEGRAPHER.

It had been rumored in the early part of this month that there was to be an important change in the Western Union management here. This proved to be correct, and, on the 9th inst., Mr. Charles A. Tinker, who has been manager of the Western Union office in this city for several years past, addressed a communication to the employees of the company, announcing, in appropriate terms, his resignation, and the appointment of Captain Leonard Whitney as his successor, with Mr. M. Marean as assistant manager. Mr. Tinker has accepted the appointment of general train despatcher of the Vermont Central Railroad, which was made vacant by the sudden decease of Mr. Randall.

Mr. Tinker was pleasantly surprised, on Wednesday evening of last week, by the presentation, on behalf of his late associates, as a manifestation of their friendship and esteem, of a valuable silver service, comprising a tea service of six pieces and a tankard, goblets, bowl and salver, beautifully wrought. Upon the tankard the following inscription was engraved: "Presented to Charles A. Tinker by the employees of the Washington, D. C., office of the Western Union Telegraph Co., January 10, 1872." The other pieces bear the monogram C. A. T., neatly engraved. Mr.

James B. Austin, of the main office, made the presentation speech, which was briefly responded to by Mr. Tinker, accepting the gift, which was to him truly a surprise in the spirit in which it was made, and expressing his great gratification and happiness at this manifestation of the friendship and kindly feelings of his late associates.

Mrs. Tinker had been privately and confidentially informed of the surprise intended for her husband, and, unbeknown to him, had prepared for the reception of the visitors. About thirty of the employees were present. About 8 P. M. the party were invited to the dining room, where refreshments had been prepared, and the silver service arranged on the refreshment table. After a happy hour passed at the table the operators present returned to the office and relieved the night force, who then called on Mr. Tinker and spent some time pleasantly.

In addition to the changes in the Western Union office above noted, Mr. R. W. Bender is chief operator of the day force, Mr. W. H. Young, of the night force, with Mr. J. Wilde as assistant chief operator.

A new and very fine Culgan switch (Phelps' improvement), for fifty wires and instruments, has just been put up in the Western Union main office here.

The Franklin Company have removed their main office from Fifteenth street to 609 Pennsylvania avenue, under the Metropolitan Hotel. The Southern Atlantic Company also occupy the same office, and work in connection with the Franklin. These companies and the public have felt the need of a main office in that vicinity ever since the close of the Bankers and Brokers' office. The Western Union Company have three offices in that neighborhood, but they are all branch offices, and only work direct to Baltimore, and possibly one or two wires to Philadelphia. The Franklin Company have also opened a branch office in the Jenners House, adjoining the National Theatre, and have placed in charge a *petite* but very handsome young lady.

This hotel has lately changed hands, and Mr. Sykes, formerly of the firm of Sykes & Chadwick, of Willard's Hotel—who were benefactors of the telegraphers during the strike—has assumed proprietorship, and changed the name to that of Imperial Hotel. I bespeak for the hotel the patronage of visiting telegraphers.

The Western Union Company have reopened their Metropolitan Hotel office, with Mr. Wells in charge.

The Automatic Company have removed their office on Pennsylvania avenue to near Fifteenth street, and it is given out that preparations are being made to astonish telegraphers and the public soon.

MONUMENT.

Marriage of a Telegraph Superintendent.

PRINCETON, ILL., Jan. 10.

TO THE EDITOR OF THE TELEGRAPHER.

A MARRIAGE took place here last evening which will no doubt interest the many telegraphic friends and acquaintances of the bridegroom. The wedding party was one of the finest that has taken place here during the season. The bridegroom was Mr. E. B. Chandler, the well known and popular Superintendent of the Fire Alarm Telegraph of Chicago, Illinois, who was married at the residence of Mr. J. M. McConihe, of this place, to Miss Emma Mosely, Mrs. McConihe's half sister. Some seventy guests were present, and bridal presents to the value of about two thousand dollars were presented to the bride by her friends.

Mr. Chandler received the warm congratulations of all present upon the happy change in his relations, and his many friends throughout the country will be pleased to hear that he has abandoned the bachelor fraternity and become a happy Benedict.

J.

Congress and the Telegraph.

WASHINGTON, D. C., January 17.

TO THE EDITOR OF THE TELEGRAPHER.

CONGRESS resumed its sessions on the 8th inst., but there has been but little of interest telegraphically in connection with its proceedings thus far, and for that reason I did not trouble your crowded columns with a communication last week.

The only telegraphic matter introduced thus far, since the reassembling, was a bill presented by Mr. S. S. Cox, of New York, on the first day, supplementary to the National Telegraph Act of 1866, giving to the International Ocean Telegraph Company the right to pre-empt and use certain public lands in Florida, now occupied and used by that Company, which was referred to the Committee on public lands.

The Postal Telegraph matter is conceded, even by its most sanguine friends, to be dead, for the present Congress at least. If any attempt should be made to revive it at the present session, it will receive such a blow from the opposition as it cannot recover from for years. The course pursued by Scudamore, in managing the English telegraphs during the recent strike, has completed the ruin of the measure here, and has deprived it of what little vitality it previously had. The opposition to the project, including Republicans as well as Democrats, needed but this straw to show what would be the tendency in case the measure became a law, and prominent members here openly denounce the whole scheme. They say that they can now see the immense power which would be wielded by the dominant party were the telegraphs under Government control, and that every objection urged

against the measure has been fully substantiated. The minority will always oppose it, for manifest political reasons.

The House Committee on Military Affairs has under consideration a recommendation of Major-General Schofield, for the establishment of telegraphic communication with the headquarters, and other important points in the Department of Arizona.

In a recent letter to the Secretary of War he says:

"When it is considered that the military expenses in Arizona are not less than \$3,000,000 a year, and that this large business is carried on with very imperfect mail facilities, and without the telegraph, it is not difficult to see that the comparatively insignificant cost of the proposed telegraph line would be more than reimbursed every year by the increased efficiency and economy in the transaction of business." He recommends that Congress be applied to to make the necessary appropriation of \$50,312 for the purchase of material, and the hire of skilled labor and transportation, and that authority be given for the employment of troops and army transportation in constructing a telegraph line from San Diego, California, via Yuma and Maricopa Wells, to Prescott and Tucson, Arizona—a distance of 628 miles. It will be found much more advantageous to the Government to construct and work the line than to give the necessary subsidy to the telegraph company. Nearly all the labor can be performed by troops, with little additional cost to the United States.

The Secretary of War has endorsed this recommendation, and it will probably be favorably reported upon by the Committee.

CAPITOL.

Personals.

Mr. CHARLES A. TINKER has resigned the management of the Washington, D. C., Western Union office, to accept a position in Vermont.

Capt. LEONARD WHITNEY has been appointed manager of the Western Union office at Washington, D. C., vice Mr. CHAS. A. TINKER, resigned.

Mr. EUGENE ADAMS has been transferred from the Philadelphia, Pa., Western Union office to the "Ow" office, Washington, D. C., of the same company.

Mr. D. MAREAN, formerly of the "Ow" Washington, D. C., Western Union office, has resigned, and accepted a situation with the Signal Corps in that city.

Mr. E. A. RISPON, of the Washington, D. C., Franklin Company's office, has resigned, and gone South for the Southern and Atlantic Company.

Mr. HOLT, formerly of the Western Union Washington, D. C., office, has accepted a situation in the Franklin Company's Washington office.

Mr. BARKER, of the Southern and Atlantic Company's Gordonsville, Va., office, has accepted a situation in the Franklin Company's Washington, D. C., office.

[From the Boston, Mass., Transcript.]

The Earth's Magnetic Elements.

To the Editor of the Transcript.

I WISH to call the attention of observers, who keep a continuous record of the condition of the earth's magnetic elements, to the fact that on the 9th of December, inst., the compass needle of my galvanometer was violently deflected to the northeast several times during the day; at 4.28 P. M. it was deflected as much as thirty degrees (30°), and remained nearly stationary for as long a period as one or two seconds. The needle seemed to start violently from zero, with a jerky sort of motion; sometimes it would be deflected not more than fifteen or twenty degrees, but on one or more occasions it rather surpassed thirty degrees, and did not immediately return, but remained, as I before remarked, one or two seconds. The instrument at this time was entirely disconnected from any electrical current, and no magnet, electro or permanent, was sufficiently near to it to affect it as much as two degrees. It was altogether a very remarkable phenomenon. I notice in the papers that there has been a severe earthquake in South America, lasting several hours. I would be glad to learn if it occurred on this day—and also would like to know if any one else noticed any remarkable magnetic perturbations on that day.

MOSES G. FARMER.

Boston, Dec. 30.

Honor to a Scientist.

OUR English advices inform us that the distinguished philosopher, William Robert Grove, who has long been one of the most eminent men of the legal profession, has been raised to the Bench of the Court of Common Pleas.

Mr. Justice Grove is the son of a Welsh gentleman of property, and was born in Glamorganshire in 1811. He was educated at Brasenose College, Oxford, and took his M. A. degree in 1833. He studied law in London for two years, and was called to the bar of Lincoln's Inn in 1835. Being compelled, by ill health, to surrender the more active duties of his profession, he, fortunately for science, devoted his brilliant intellect to the investigation of physical phenomena, especially those of electricity. One of the first productions of his researches was his invention, in 1839, of the voltaic battery, which has given him a world-wide fame. Subsequently, in 1840, he received the chair of experimental philosophy at the London Institution, and continued to occupy it for seven years; and it was in the fulfilment of his duties as a lecturer that his courageous originality and penetrating diagnosis were shown in the assertion of the correlation and mutual convertibility of the various species of force. This announcement—one of the most brilliant lights over the

field of nature which has ever illuminated the path of the investigator, and one of the greatest discoveries which has been made since Newton promulgated the laws of gravitation—is now universally accepted as indisputable truth; and Mr. Grove's experiments have substantiated the fact that no force whatever can be evolved except at the expense of some other force. The new doctrine gave the word at which many other scientists commenced their labors, and proofs of the truth and importance of the Doctrine of the Correlation of Forces are coming before us daily. Mr. Grove further developed his views in another lecture, published in 1846. Among his many valuable and important discoveries are the gas voltaic battery, the strise in the electrical discharge, the electricity of flame, the voltaic etching of daguerreotypes, the electro-chemical polarity of gases, new combinations of aplanatic object glasses of telescopes, and the molecular impressions by heat and electricity.

Although Mr. Grove's weak health formerly prevented him from following the arduous career of an advocate, as a lawyer he has achieved a high reputation for learning and forensic ability, and he has just received a fitting recognition of his talents by his elevation to the judicial bench. To a philosopher of Mr. Grove's renown public honors and wealth are of little importance, and, indeed, his acceptance of the judicial ermine will cause him to forego a lucrative practice and take the moderate income of \$25,000 a year. But the ease and dignity of the new position will enable the eminent recipient to prosecute further his investigations, and we have no reason to doubt that the world of knowledge and science will be greatly benefited thereby.—*Scientific American*.

The Telegraph.

By Cable.

PROPOSED NEW ATLANTIC CABLE.

LONDON, Jan. 12.—The London Times' financial article announces that a combination of telegraphists agreed yesterday to establish direct cable communication between England and New York.

APPOINTMENT OF DIRECTOR-GENERAL OF BRITISH TELEGRAPHS.

LONDON, Jan. 12.—Mr. Frank Ives Scudamore has been appointed Director-General of the Telegraphs of the United Kingdom.

THE PROJECT FOR A NEW ATLANTIC CABLE.

LONDON, Jan. 15.—The city press generally approve of the project for the laying of a new telegraphic cable from the English coast to that of the United States, and agree that cheaper rates than those of the present lines will be an incentive to the business community and the press of both countries.

THE INTERNATIONAL TELEGRAPH CONVENTION.—HONORS TO THE DELEGATES.

ROME, Jan. 15.—The convention adopted by the International Telegraph Congress has been signed, and the delegates have gone home.

The illumination of the Coliseum in honor of the Telegraphic Congress was most successful. An enormous crowd of people were present to witness the spectacle, which was most magnificent. At a given signal the whole of the majestic ruins were bathed in a sea of light, the spectators remaining to the last. Before the crowd had time to disperse finally, three rockets fired in the air announced another phase of the spectacle, and instantly the whole of the edifice was again illuminated, but this time each row of the extensive galleries displayed a different color. The persons who had assembled to witness the display then dispersed, highly gratified by the spectacle.

A NEW ATLANTIC CABLE CONTRACTED FOR.

LONDON, January 17.—The Telegraph Construction and Maintenance Company yesterday signed a contract with the Messrs. Bischoffsheim for the laying of an Atlantic Telegraph Cable to New York direct.

A New Atlantic Telegraph Cable Proposed.—A Sanguine Cable Inventor.

A Mr. J. WAGSTAFF BLUNDELL, we perceive, invites subscriptions to a cable of his own, which he says he can get made and laid for £800,000, although the Construction Companies are so unkind as to refuse to give him a quotation for cash—at least, so he says—but we have heard that the Construction and Maintenance Company asked him £1,400,000 for making and laying. Mr. Blundell is a sanguine man, evidently. We hardly think that a cable such as the public would trust their money in could be made under £1,200,000, seeing that the cost of all materials and wages have so much advanced lately. His ideas about the working capacity of his cable and smallness of working expenses—only £15,000 a year being allowed for repairs, renewals and reserve—are also sanguine. Then, out of 10s. a message his cable is to secure 9s. net, whereas the Anglo and French are only to get about 2s. 6d. each, which is a little puzzling.

It is a bold idea, after all the fruitless efforts that have been made for the last two or three years by financiers and practical telegraphists, that Mr. J. Wagstaff Blundell should grapple single handed with the prestige and power of the existing companies. If he succeeds it will give us more faith in the heroic deeds of Jack the Giant Killer; but we fear even Mr. Blundell's name will not inspire the British capitalists with the requisite amount of confidence to provide a fourth cable.—*The Railway News*.

The New Toronto, Ontario, Office of the Montreal Telegraph Company.

THE Montreal Telegraph Company have recently built and occupied for the offices of this company in Toronto an imposing building on the corner of Wellington and Scott streets. In their new quarters accommodation is provided for sixty-five employees of the company. The office is a model one. The receiving room is entered by the main door at the corner of the two streets. It is a spacious room, twenty-five by forty-five feet, and sixteen feet high, well lighted, with a carved walnut counter for receiving messages. Desks are placed around the room for the accommodation of customers desiring to write their messages. Pneumatic tubes connect the operating room and the Superintendent's office with the receiving department. At the opposite end of the counter from the receiving clerks is the delivery department. A capacious safe, with a large number of pigeon holes, receives each day's messages separately, where they can be safely kept, so long as it is necessary to preserve them.

On the next story is the private office of the Superintendent and the rooms of Mr. Toye, the Electrician, and Mr. Marling, Assistant Superintendent. These offices are all connected and fitted up with the necessary appliances for the prompt transaction of business.

In the third story there are two operating rooms, each thirty-five feet square, which contain instruments for sixty lines. The wires converge from all points of the compass to the cupola of the building, are there arranged as delicately as the strings of a piano, insulated with paraffin, covered with silk or rubber, brought along boards in the ceiling to the complex "switch," and thence to the different tables, which are as carefully isolated. Every instrument can be at once detached, or connected with any line in the building, at the pleasure of the operator. In the middle of the room, in a lofty case with glass doors, is the curious "switch," which receives the bewildering wires, and can adjust them to any combination which the needs of business may demand. Detroit can, by the movement of a button, be connected with Montreal, Sackville with Toronto, and even San Francisco with Quebec. One of the operating rooms is to be devoted exclusively to female operators.

The battery room is in the third story, at the end of the building. The battery wires, which hang from the ceiling, are carefully insulated, and the floor is covered with a preparation of felt, impervious to the action of acids. The room is thoroughly ventilated, provided with water and soapstone tanks, and other appliances necessary. Battery material, which occasionally is of a heavy character, is brought to the room from the basement by means of a hoisting apparatus. An adjoining room is used for storing materials.

The private entrance on Wellington street opens in a hall and vestibule. A flight of stairs leads to the basement, the rooms of which are to be used for storage purposes.

Liability of Telegraph Companies.

SOME months since Mr. George T. Dickerson entered suit against the Western Union Telegraph Co., claiming \$5,000, because of the negligence of the company in the delivery of a message, by which he was not informed of his sister's death at Syracuse, N. Y., until some days after the obsequies—the telegram having been directed to Gen. T. Dickerson. The defendant demurred, on the ground that the declaration showed no right of action in plaintiff against defendant; that it does not disclose he had such an interest in the subject matter of the despatch as to entitle him to sue for negligence, and it does not appear whether the defendant is sued for cause arising *ex contractu* or *ex delicto*. The demurrer was argued by Mr. Trigg for plaintiff and Mr. N. Wilson for defendant, and a few days ago Judge MacArthur announced his opinion, sustaining the demurrer. He discusses the liability of telegraph companies; holds that in this case the plaintiff sustained no pecuniary loss; but, on the other hand, the circumstance of not receiving the message in time, would bring to him sympathizing friends, &c., and, as he was not the contracting party, the telegram having been prepared elsewhere, he has no right of action.—*Washington (D. C.) Star*.

Foreign Telegraphic Notes.

SHANGHAI advices from China to Dec. 11th, 1871, via San Francisco, January 15th, state that telegraphic communication with Europe had been opened.

Total number of messages forwarded from postal telegraph stations in the United Kingdom during the week ending the 16th December, 1871, was 238,436, an increase of 56,800 on the corresponding week of the previous year.

It is said that the Telegraph Construction and Maintenance Company have granted the nine hours' system to their workmen, at their telegraph cable works in East Greenwich.

The Government of South Australia is carrying its wires across the Continent, to meet the British Australian Company's cable at Port Darwin, and connect the Australian telegraph system with Java. A project has been formed for connecting England with Australia by Java Head, by a submerged cable direct from Port Otway to King George's Sound, West Australia, thence by land lines of some 500 miles, now being constructed to Champion Bay, a seaport on the west coast, and by a second submarine cable to Java Head.

The British Australian Telegraph Company have received a telegram from Captain Halpin, announcing the successful laying of the cable from Port Darwin to Banjoewangie, in the island of Java.

The annual meeting of the Nova Scotia Telegraph Company was held January 10th, at Halifax, when the state of the lines and the operation of the lease to the Western Union Telegraph Company were reported as satisfactory. Legislative action had been secured to protect Nova Scotia from breach of charter by Dominion Co. The directory of last year was reelected. Officers will be chosen at a meeting to be held at the close of the month.

The Dover and Calais, and the Folkestone and Boulogne Telegraph Cables are interrupted.

The total number of messages forwarded from postal telegraph stations in the United Kingdom during the week ended December 23, 1871, was 248,215—an increase on the corresponding week of the previous year of 68,763.

THE supply of India rubber is said to be inexhaustible. Each tree can be tapped for twenty successive years, and yields on an average three tablespoonfuls a day. 43,000 of these trees have been counted on a tract of land thirty miles long by eight wide.

New Patents.

For the Week ending January 2, 1872, and each bearing that date. No. 122,474.—TELEGRAPH APPARATUS.—George Little, Rutherford Park, N. J.

1. A shunt circuit, operated or closed by an electro-magnet in the main line.
2. A resistance in a shunt circuit, in combination with an armature that opens or closes the shunt circuit and an electro-magnet in the main line, substantially as set forth.
3. A stylus, in combination with a shunt circuit, resistance and electro-magnet in the main line, substantially as set forth.
4. An electro-magnet in which one helix is in the main line circuit and the other in a shunt circuit, and that shunt circuit is opened or closed by a movement derived from the armature of the magnet.
5. A local or relay circuit connected in a shunt circuit, substantially as set forth, so that the movement derived from the armature to open or close the shunt circuit simultaneously, opens and closes the local or relay circuit, substantially as set forth.

EXTENSIONS.

No. 18,945.—MODE OF LIGHTING GAS BY ELECTRICITY, granted to Samuel Gardner, Jr., December 22, 1867.

Turning on or shutting off inflammable gas, by degrees or gradually, through the agency of electricity, for such purposes as are hereinbefore alluded to.

For the week ending January 9, 1872, and each bearing that date.

No. 122,572.—ELECTRO-MAGNETIC ENGINE. Henry S. Daggett, Lafayette, Ind.

1. The magnets C C, arranged in rows and connected with the wires d d d d and pendant chains f f f f, &c., substantially as herein set forth and described.
2. The piston b, provided with the swivel lever E, which moves under the chains f f f f, &c., and thereby produces successive connections with the several rows of magnets, as set forth.
3. The stops j l, affixed to the frame A, for swinging the lever E at the end of every stroke, and thereby reversing the motion of the engine, as specified.
4. The electric engine, consisting of the frame A, rack B, magnets C C, wires d d d d, &c., chains f f f f, &c., piston b, lever E, and stops j l, all combined to operate substantially as herein shown and described.

No. 122,656.—TELEGRAPH POLE.—Timothy Rogers, Fredericktown, Ohio.

The combination of the hollow metallic sections D O B, each provided with tenons and shoulders, as shown, with the base A, having flanges b, and filled in with suitable material (E), which extends to or above the joint of section B, all substantially as set forth.

No. 122,664.—ELECTRO-MAGNETIC HOTEL ANNUNCIATOR. George B. Scott, Brooklyn, N. Y.

1. The magnet C and escapement, consisting of the armature D d d' and wheel E', in combination with the numbered roller E and the transparent slit or space a of the case A, all arranged and operating substantially as specified.
2. In a hotel annunciator, substantially such as described, the arrangement of the battery, tell-tale, magnets, key H, and wires f f' and c c', in the manner and for the purpose set forth.

No. 122,687.—TELEGRAPH PRINTING APPARATUS. Henry Van Hoevenberg, New York.

The lever H, affixed to an armature, G, of a magnet, F, having its own wire, and provided with pins i and j, or equivalent devices for setting one of two actuating pawls, a b, out of action, substantially as herein shown and described.

2. The type wheel armature lever U, having pawls a b pivoted to the arm, and combined with a second lever, having stops to throw either pawl into gear with the toothed wheel, as described.

3. The stop w on the shaft D, combined with the catch n on the arm o of the armature G, substantially as and for the purpose herein shown and described.

Married.

CHANDLER—MOSELEY.—At Princeton, Ill., January 9, at the residence of Mr. J. M. McConihe, Mr. E. B. CHANDLER, Supt. of the Fire Alarm Telegraph, Chicago, Ill., and Miss EMMA MOSELEY, of the former place.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS
OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, JANUARY 20, 1872.

Crowded Columns.

IN consequence of the pressure upon our columns this week, we have been compelled to omit several columns of communications, and other interesting matter in type, and intended for publication in the present number.

Advantages of Proper Business Accommodation for Telegraphic Employees.

IT affords us much pleasure to witness and record the manifestation, on the part of telegraph managers, of a disposition to study the health, convenience and comfort of the employés in the occupation and arrangement of offices. The new operating department of the Western Union Telegraph Company in this city, a description of which we publish this week, and that of the new office of the Montreal Company at Toronto, are notable instances of the improvement in this respect. In these and other offices which have been fitted up or reconstructed during the past year or two, every appliance and convenience possible have been provided which will tend to facilitate the business, make them comfortable and suitable for occupation, and pleasant and agreeable for those employed therein.

If in nothing else, there has been a marked improvement in this respect in telegraph management, which reflects credit upon those by whom it has been effected. The time is not so far past that even those who are comparatively young in the business cannot recollect when any sort of a hole was considered good enough for telegraphic business, if it was only central and easily accessible to customers, and of cheap rent. Telegraph employés were stuck into basements and cellars, or out of the way rooms, where the light was bad, or had to be supplemented with gas or kerosene; the apartments were without ventilation or suitable sanitary accommodations, and of a generally dark and gloomy character, well calculated to develop suicidal tendencies, if consumption and kindred diseases failed to accomplish their work with sufficient rapidity, on account of unusual robustness of constitution on the part of the occupants of these dens.

There is yet room for improvement in many offices, but the instances are few now where telegraph managers deliberately immure their employés in such unfit and murderous places. We have in times past protested, on behalf of the fraternity, against this outrage upon them, and are rejoiced to find that our words have not proved unproductive of good. In this, as in other matters which interest the fraternity, THE TELEGRAPHER has proved to be powerful for good.

That the change of policy in this respect will prove advantageous to the interests of the companies as well as of the employés there can be no doubt. More and better service will be rendered, blunders and mistakes will be less frequent, and telegraphers can remain in the profession without additional risk of becoming subjects for obituaries in THE TELEGRAPHER, or a tax upon the funds of the Mutual Insurance Association.

Having seen this reform accomplished, we do not despair of yet recording such an arrangement and reduction of the hours of labor as shall supplement the good work so well commenced, and obviate another just cause of complaint on the part of telegraph employés. The business is arduous and exhausting if too long continued, and in some offices the labor required of operators is unreasonable and excessive. This should be remedied, and for a day's compensation only a fair day's work should be required. If extra labor is necessary it should be paid for as extra. There is neither sense or reason in requiring telegraphers to give ten to fourteen or more hours' services for a day's work. Eight hours in an office where the labor is continuous, as it has become

in all the more important offices, is all that can reasonably be required. In offices where the work is intermittent ten hours is not unreasonable, but anything beyond these limits deserves and should receive extra compensation.

It is evident that the world does move, and, so far as reform can be accelerated through the influence of this paper, it shall not be found lacking.

Having accomplished these reforms, if telegraph managers will turn their attention to providing proper wires, insulation and instruments on which to do their work, we think that the telegraph may be made reliable, useful, and pecuniarily successful.

A Proposed Reduction in Cable Rates.

THE directors and managers of the different Atlantic cables have been in communication with Mr. Orton, of the Western Union Telegraph Company, for some time past, in regard to a proposed reduction of rates, inspired by the fact that up to the present time the business done by these lines has not been equal to the capacity of more than two cables. It is believed that the managers, who will soon decide the question, will adopt the suggestion of Mr. Orton and others familiar with telegraphic enterprises, and that a reduction will be made of from 10 to 25 per cent.

The above paragraph appeared in the *New York Tribune* of last Tuesday. We have made inquiries in the proper quarter in regard to the matter and learn that the statements are generally incorrect.

The managers of the cable companies have not had in contemplation a general reduction of the tariff, but are considering a partial rearrangement of rates, by which the minimum limits of despatches may be reduced, and the charge for a less number of words than ten shall be at the same rate per word as is now charged for a minimum of ten words. This would be advantageous to many persons who use, or desire to use the cable, and who can convey their meaning in fewer words than they are charged for under the present tariff.

There have been no such communications or suggestions as are stated in the *Tribune* paragraph.

The Brooks Insulator.

WE have been shown a sample of BROOKS' insulator, as manufactured by SIEMENS BROTHERS, at Woolwich, England. The specimen is of the screw shank, galvanized iron pattern. The shank, or screw portion entering the post, is heavier and longer than in those manufactured in this country by Mr. BROOKS; the hook is also longer and heavier. So far as strength and appearance are concerned, we think they have the advantage of those made in this country. In Europe larger wires and fewer poles are used than in this country, and it is but reasonable that a larger, and, in some respects stronger insulator, should be required.

SIEMENS BROTHERS are the most extensive manufacturers of telegraph and electrical apparatus in the world. They have immense works in England, at Woolwich, near London; at Berlin, Prussia, and at St. Petersburg, in Russia. As electricians they stand preëminent. They were the first to use gutta percha as an insulator for submarine cables. Dr. WERNER SIEMENS first published the mathematical formula for locating breaks or faults in cables, and also invented the most practical and simple measure of current resistance—the one adopted as the standard by a conference of eminent electricians from all countries, assembled at Vienna in 1868.

This eminent firm have arranged with Mr. BROOKS for the exclusive manufacture of this insulator in Europe, and this arrangement is evidence that they are aware of its merits and superiority to other insulators.

It affords us pleasure to be able to state that the demand for the BROOKS insulator during the past year was greatly in excess of the facilities for their manufacture. Large numbers were sent to South America, and they are now used in all parts of the world.

Pope & Edison Printers for Sale.

WE call attention to the advertisement, by L. G. TILLOTSON & Co., of four of the POPE & EDISON Type Printing Telegraph Instruments. These instruments are in excellent order, and as they are not now sold by the company which manufactures them, this is an opportunity to obtain them which may not occur again very soon.

The New Western Union Operating Department.

WE are frequently compelled to criticise the Western Union Company and its management rather severely, and it therefore gives us especial pleasure to commend when the opportunity is afforded.

On our first page will be found a very full and interesting description of the new operating department of the main office in this city, No. 145 Broadway, which has just been completed and occupied.

In arranging and fitting up this department every effort has been made, and no expense spared, to make it comfortable and convenient for the operators, and to provide every possible facility for the proper transaction of their duties and lightening their labors.

In all the larger offices of the company which have been reconstructed during the last two or three years, a disposition has been shown to consult the health, comfort and convenience of the employés, as far as practicable.

There is no doubt but that the new office is one of the best equipped and most complete telegraph offices in the world.

We are under obligations to President ORTON, and Messrs. PRESCOTT, BROWN and their assistants, for the courtesy and attention shown our associate, and for the facilities afforded for obtaining an accurate and reliable account of the office and its accessories.

The Franklin Statue.

THE bronze statue of BENJAMIN FRANKLIN, presented by ALBERT DE GROOT to the printers of New York, and which has been erected in Printing House Square, was unveiled on Wednesday last with simple but appropriate ceremonies. Prof. MORSE, although in feeble health, unveiled the statue, and addresses were made by HORACE GREELEY and C. C. SAVAGE.

In the evening the occasion was celebrated by a banquet at DELMONICO'S.

The crowded condition of our columns compels us to postpone any detailed account of the matter.

Peters' Musical Monthly.

PETERS' *Musical Monthly* for January appears in a new dress. It is printed on thicker paper, and is in many respects superior to its predecessors. The selections are made with great care, and comprise many excellent and valuable pieces.

Our musical readers will find it decidedly to their advantage to avail themselves of the opportunity afforded by the publisher to obtain good music at an astonishingly low price. Volume IX commences with the January number. Price, \$3 per year; single numbers 30 cents. Published by J. L. PETERS, 599 Broadway, New York.

Miscellaneous.

SIEMENS' DYNAMO-ELECTRIC LIGHT, FOR WARFARE.—A series of experiments have lately been made at Sheerness, England, in order to ascertain the applicability of this electric light in aid of the torpedo service in war operations. Many of the engineer officers, and those especially connected with the torpedo committees, were present upon this occasion, when it was amply demonstrated that no objects of appreciable size, such as ships' boats, could come within a mile or two of a battery, shore or coast line, where one of Siemens' instruments is in operation, without being rendered conspicuously visible and exposed to the fire of artillery and musketry, involving them in great peril.

PENDULUM EXPERIMENTS, FOR DETERMINING THE GRAVITY OF THE EARTH, are about to be made in the Mont Cenis Tunnel by Father Secchi, M. Diamiller-Müller and M. R. P. Deuza. These will be made first in a lateral chamber about the centre of the tunnel, and will be afterwards repeated at the corresponding vertical point on the mountain—the difference of level being about 1,600 metres. In addition to these observations they propose to determine the earth's magnetism and the temperature of the strata to which they can obtain access. By preliminary observations they have ascertained that the movement of the trains will not, to any serious extent, interfere with the precision of the observations. Telegraphic wires will be laid down for the purpose of chronographic registration, and the observing chamber will be ventilated by special air conduits.—*Comptes Rendus*, Vol. LXXIII, p. 1192.

In *Les Mondes* we find a proposed plan for replacing the oil signal lamps of ships by an electric light, derived from a magneto-electric apparatus, set in motion by a screw, which is rotated by being drawn through the water by the ship.

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Detroit, Mich.,
Dayton, Ohio,
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Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
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Mobile, Ala.,
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Springfield, Mass.,
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Savannah, Ga.,
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OF
FIRE ALARM TELEGRAPH
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It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

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that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original FARMER & CHANNING PATENTS, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

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has met with the universal approbation and commendation of the

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AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION OF CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

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Manufacturers of and Dealers in every variety of TELEGRAPHIC AND ELECTRIC APPARATUS AND SUPPLIES.

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We have four of the

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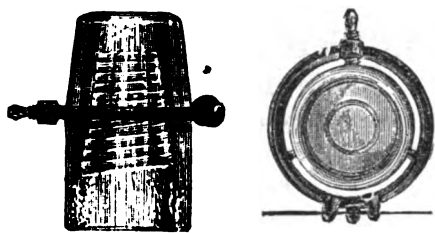
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for which hundreds of them are already in use.

L. G. TILLOTSON & CO.,

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CHESTER'S PATENT INSULATOR.



The undersigned solicit examination of some of the reasons which have induced them to recommend to their patrons and friends the Insulator exhibited above as the best and cheapest in use.

Experience has shown that pure glass is, under certain conditions, nearly a perfect insulating medium, and could these conditions be uniformly maintained for all purposes of practical telegraphing, we might rest there, satisfied that so long as the conducting wire be separated from its various points of support by a glass shield, of whatever size or shape, that there could be no escape of current from the conducting wire.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The conducting media, which, to a greater or less degree, are inseparable from ordinary insulators of glass, hard rubber, earthenware or porcelain, are continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire.

It is also evident that the amount of conductivity over each and every insulator, arising from these causes, is decreased by the longer distance the current must traverse these imperfect conductors between the wire and its point of support, and is increased by the increased diameter or breadth of the Insulator, as affording a greater number of these lines of conduction. When glass only is regarded, another objection also exists to great thickness, in the fact that the unequal cooling of the mass produces innumerable microscopic surface fissures, which at certain temperatures absorb moisture from capillary attraction.

Glass of ordinary surface, such as is used for ordinary Insulators, hard rubber, porcelain and earthenware, have in different degrees the capacity for receiving and retaining surface moisture in continuous lines, either from direct showers or by the condensation of moisture upon even an apparently dry day, when the thermometrical changes are such that the temperature of the Insulator is less than that of the atmosphere.

The original surface fractures alluded to in ordinary Insulators of glass are much increased, and others are produced by the necessary strains and shocks to which they are exposed during the erection of the wire and its subsequent swaying. These are the more vicious, as they are not apparent from any ordinary point of observation.

Hence, the requisites of a perfect Insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

In the construction of Insulators great ingenuity has been exercised to give strength, and yet elongate and narrow the lines of superficial continuity. The support of the wire has been drawn out to as great a length as is consistent with strength, and the glass has been made narrow, and Insulators thus made have proved very serviceable. It is obvious that there is a limit to this idea under old forms of construction.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal. It requires no labored description to bring out the self-evident fact. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH. The removal or substitution of an Insulator, without disturbing the conducting wire, is an incidental advantage of this construction.

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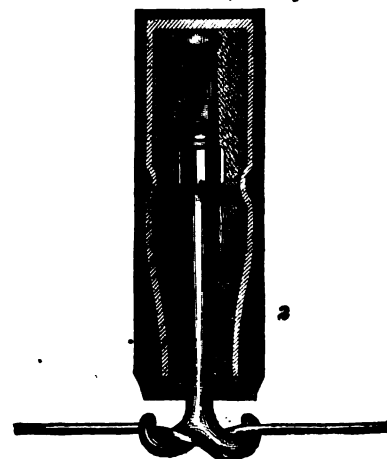
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The Telegrapher

A Journal of Electrical Progress.

Vol. VIII.—No. 23.

New York, Saturday, January 27, 1872.

Whole No. 289

[From the *Mechanics' Magazine*.]

Wheatstone's Automatic System.

In the ordinary system of telegraphy, on the most rapid instruments in use, the limit of speed is not that of the capability of the instrument itself to transmit the signs sent, but depends solely upon the skill of the operator in rapidly moving the key or keys used to transmit the signals; and it will be evident that if it is required to send a greater number of words in a given time than one operator is capable of sending, we must increase the number of operators—necessitating, in the ordinary system, an increased number of wires and instruments. The automatic system, by making the formation of the different signs independent of their transmission, does away, within certain limits, with the necessity of increasing the number of wires and instruments along with the increase of operators. The instrument used for this purpose consists of three parts—the puncher, the transmitter, and the receiver. The puncher is an instrument for preparing a paper ribbon. It contains three levers, one of which produces two holes at right angles to the ribbon, which represents the dot in the ordinary Morse code; another, two holes diagonally for the dash; and a third, which is between the other two smaller holes in the centre of the ribbon, forming a rack by which the paper is carried forward in the transmission of a message. The dot and dash punch also act on the centre punch. The punches are either struck by small handles, one for each hand, faced with rubber, or by pistons worked by compressed air.

Fig. 1 represents a portion of a perforated ribbon, and also the paper, as printed by the receiver.

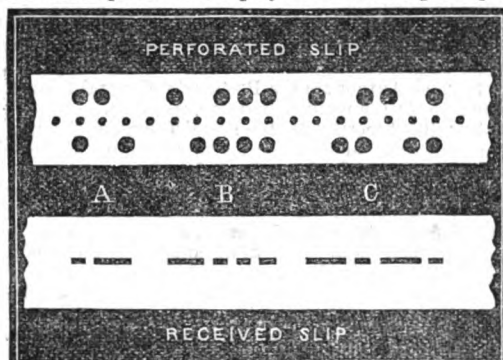
2d. The transmitter, which is driven by clock-work and regulated by a fly, which can be adjusted to carry forward the perforated paper at a uniform speed of from 20 to 120 words, of an average length of five letters per word, per minute. Now, an operator can punch 40 words per minute; so that if we have three operators, each with a punching apparatus, and the transmitter adjusted to 120 words per minute, the perforated ribbon can be transmitted as fast as it is prepared by the three, for $3 \times 40 = 120$.

The construction of the transmitter is as follows:

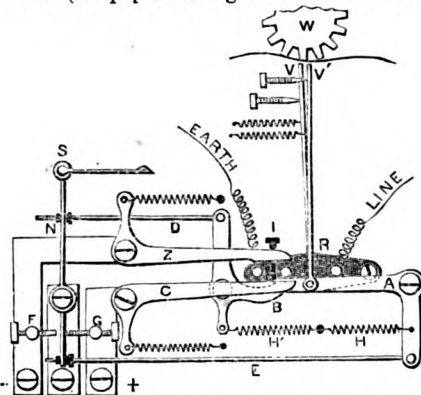
An ebonite beam, R (Fig. 2), which is caused to rock on an axis midway between the left and middle pin by the clock-work, has three metal pins; that on the left hand is connected to line, that on right hand to earth; the centre pin is insulated, and serves to connect the lever B either to the lever Z or C, according to its position. Beneath the pins of the beam are the levers A and B, which are pivoted independently, electrical communication between the two being established by means of the springs H and H'. These springs serve also to give the levers a tendency to rise toward the beam R. The vertical needles V' and V are severally pivoted to the ends of the levers; their distance apart is that of the perforated holes at right angles to the ribbon; it will be seen also that the end of the needle V is a little in advance of V'. To the other arms of the levers A and B are pivoted the needles D and E; their ends are covered with ebonite, to keep them insulated from the lever N, through holes in which they pass; the ebonite ends have each of them a small shoulder, which causes the lever N to vibrate in one direction or the other, according as the needle D or E is advanced; the lever itself is maintained firmly in either position by the small wheel S attached to the end of a spring. A resistance coil is inserted between the piece, to which is pivoted N and the left hand pin of the rocking beam, when working long or submarine lines, to equalize their potential. The levers Z and C, which have a tendency to approach one another, given by springs, are connected severally with the zinc and copper poles of the battery; they are separated at their ends by the small ebonite screw I.

The action of the instrument is as follows: The clock-work being set in motion, the perforated paper ribbon is inserted underneath the fluted roller W, and is carried forward by a small star wheel placed between the needle V' and V; the rays of this wheel entering the small holes in the middle of the ribbon and carrying it forward, at the same time the beam R rocks up and down, causing the alternate depression of levers A and B, and also of levers Z and C. If now we suppose the left hand end of the beam to have descended, then

a current will pass along C to B through the middle pin of the beam, thence through the springs H H' to A and through the left hand pin to line, then back again through earth to right hand pin, and thence through Z back to battery. If now we suppose the right hand end to be depressed, the current flows from C to right hand pin to earth, back again through line to left hand pin, through H H' to B, through middle pin to Z and back to battery. Thus, if the beam continually rocks, alternate positive and negative currents will be sent through line to receiver; but if we interpose the perforated paper, currents will only be sent when holes arrive opposite the needles V V'; for if the needles on commencing to rise encounter a blank space, on the beam R continuing to rise, the circuit is broken between the left hand pin and A, or the middle pin and B, according as V' or V come against the unperforated portion of the paper ribbon, and no current will be sent through line. The action of the receiver will then be as follows: Supposing the letter A to be sent, this is represented by a dot followed immediately by a dash, and on the perforated strip by two holes at right angles



to the edge of the paper, followed by two holes diagonal to it. The needle V first passes through one of the holes of the dot sign and allows a copper current to be sent to line, which, acting on the receiver, presses a small inked wheel against a moving strip of paper; the needle V then descends, and at the same time the paper is moved slightly forward and the needle V' enters the second hole and a fine current is sent to line, which withdraws the printing wheel of the receiver, and thus a dot or rather short dash is printed. The needle V now again rises and enters the first hole of the dash, and the printing wheel presses against the paper; when V' now ascends, the second hole of the dash being behind the first, the needle encounters the paper and cannot rise, so that no current is transmitted. V now again rises (the paper moving forward the whole time



both on the transmitter and receiver), and again no current is transmitted; V' now rises and enters the second hole, and a zinc current being transmitted, the printing wheel is withdrawn, and thus a dash is produced.

The receiver is constructed somewhat on the principle of a Morse ink writer, with positive and negative currents. The printing wheel, which is of very small dimensions, is kept constantly inked by a wheel, the lower part of which revolves in a small dish of ink. This wheel has a narrow groove in its periphery, in

which the printing disk rests when in its normal position. The general arrangement and weight of the moving magnets is such as to give distinct signs with a very slight current. The apparatus is found to work extremely well with currents from a small induction coil, and messages can be printed with beautiful distinctness with two elements only to the primary coil, through a resistance equal to 2,000 miles of No. 4 iron wire—that is, the ordinary telegraph wire. The instruments are in use on several of the main circuits of the post-office telegraphs, and also on the China and Japan and other submarine lines, and are likely to have a still more extended employment.

Mr. Cyrus W. Field and the International Telegraph Conference.

Mr. CYRUS W. FIELD, who, by invitation of the Italian Government, attended the recent International Telegraph Conference at Rome, on the 28th of Dec. last, addressed the Conference at length in reference to telegraphic matters, embodying in his speech his views in regard to cable telegraphy especially, and such recommendations and propositions in connection therewith as he deemed essential. Mr. Field's propositions received the favorable votes of a majority of the conference.

He urged upon the Convention: First—the making of submarine cables neutral property in time of war, and that the destruction of telegraph cables by belligerents should be condemned as an act of barbarism, and be strictly prohibited by the law of nations. “On the other hand,” he said, “a belligerent, under the plea of military necessity, will not forego the right to control the telegraphs in his own or even an enemy's country; but, at the same time, the transmission of private messages, which are in themselves harmless, is a privilege that may safely be conceded under proper regulations. In civilized warfare, thanks to enlightened statesmen like the lamented Cobden, the duty of exhibiting as much humanity and forbearance towards private citizens as possible is now generally recognized, although, unfortunately, this principle heretofore has been only imperfectly applied. But manifestly private messages, if they contain nothing to which a belligerent need object, may safely enjoy immunity at the hands of the military authorities. Moreover, a convention between the powers should secure, so far as human compacts or agreements can secure anything, the absolute safety of every telegraph, whether in the land above or in the sea beneath. A hundred arguments might be advanced in support of this proposition, but I need only mention the powerful one that a telegraph may be the means of making or accelerating the making of peace between the combatants. In a treaty between Italy and the United States, the ratification of which was exchanged at Washington last month, the principle of inviolability of private property on the high seas in time of war was for the first time consecrated in an official international act. Second—the neutrality of the cables. He also urged that the exclusive right to lay a cable between two foreign countries should not be given without the joint consent of the respective Governments. It is a mere truism to say that a Government cannot impart rights which it does not itself possess. In other words, it is impossible for a State to grant to private persons privileges which it would never dream of exercising in its sovereign capacity. It is absurd to suppose that A has a right to connect his territories with those of B; still less to connect them through the agency of C, without the full consent of B, and on such terms as the latter may be willing to agree to. The President of the United States, in his Message to Congress on the 4th of December, used the following language: “Especially do I recommend favorable consideration of the plan for uniting the telegraph system of the United States with the postal system. It is believed that by such a course the cost of telegraphing could be much reduced, and the service as well, if not better rendered. It would secure the further advantage of extending the telegraph through portions of the country where private enterprise will not construct it. Commerce, trade, and, above all, the efforts to bring a people widely separated into community of interest, are always benefited by a rapid intercommunication. Excepting the United States, the principal land lines of the world are the property of the State, and are

worked for the benefit of the State—i. e., for the benefit of the great body of the people, whose interests are thus effectually secured." A telegraphic monopoly in the hands of the State is held for the advantage of the entire community, and is therefore not exposed to those fluctuations and vicissitudes which are inseparable from the management of a private speculative enterprise. If it is desirable that land lines should not be held by private persons, it is not the less desirable that submarine cables should be vested in the Governments whose territories are thus electrically united—and perhaps the day is not distant when the work of providing and maintaining international telegraphs will be no more left to private enterprise than the ordinary postal arrangements between foreign countries—and when, moreover, it will be seen that this method combines the elements of efficiency and cheapness. So long, however, as the world is dependent on private enterprise for submarine communication, it is important that the utmost liberty should be given to the management of the companies.

He called the attention of the Convention to the injustice of charging more for international, or messages passing from one State to or through the territory of another State, than is charged upon local messages within the territories of such States respectively. All experience shows that the establishment of a uniform rate, instead of being injurious, is highly beneficial to the revenue. The present system is costly and vexatious to the public, without being remunerative to the countries which are supposed to profit by it. The tariffs should be as low as possible consistent with keeping all the lines in perfect order, having the business performed in the most efficient and accurate manner, laying aside annually a sum sufficient to rebuild the land lines or relay the cables, and pay a fair interest on the capital invested.

He had good reason to hope that before this Conference meets again the telegraphic circuit of the globe will have been completed, by the laying of a cable between the United States, Japan, the eastern provinces of the Russian empire and China, and was therefore the more anxious to submit his views to the Conference.

In conclusion, Mr. Field expressed the earnest hope that the Conference would recommend to the various Governments represented the desirability of embodying the first and second proposals in an international treaty, which, if done, he believed would be another step taken in the onward march of civilization.

The Montreal Telegraph Company.

A MILLION of home telegrams; a quarter of a million foreign ones; a thousand telegraph offices; fifteen thousand miles of wire; such is the exhibit of this colossal company for 1871. From Gaspé to Amherstburg; from Stanstead to Pembroke; from Sydney and Yarmouth to Bathurst and Rimouski stretch the thin gray lines, the "symbols of civilization." From Montreal to anywhere, for twenty-five cents, a Canadian can send New Year greetings; for a cent a word we colonists can buy wheat, transfer shares, order goods of one another, at distances of from one to twelve hundred miles as the crow flies. One needs to stop and consider before he can realize such strides as these, and it has required long planning, careful thinking, and a wonderful amount of enterprise, method and persistency, to accomplish these results.

In 1849 the single wire between Toronto and Montreal was the wonder of the day; people of the past generation were half afraid of this tamed string lightning. The wire that passed through the streets, or wound among the trees along the road, was watched with a curious awe by most. Birds that alighted on it were thought to be doomed; thunder storms were at once invested with greater terrors by reason of this horizontal lightning rod, that was sure, people said, to bring bolts from the clouds to every man's door. But few could be got to make use of the strange and uncanny method of rapid communication, and, besides, the rates were by no means within the reach of every man's purse. At that time the office in Montreal was vastly different from the thronged and noisy building we see it to-day, while that in Toronto was conducted by two errand boys and one operator—that operator being the present able, upright, far-seeing Superintendent, Mr. Harvey P. Dwight, whose record, in some future *Bibliotheca Canadensis*, will, if it be a correct one, place him high among the public benefactors of the Dominion.

One hundred and fifty new offices have been opened this year—the total number of offices on the company's lines and its immediate connections being 895, viz., in Ontario, 430; Quebec, 215; United States, 130; New Brunswick, 66; and in Nova Scotia, 54. The total number of offices of the company and its immediate connections in the Dominion is 765, scattered from the remote points of Gaspé, in Quebec, through the extreme lumber districts of the Upper Ottawa, on the shores of the three great lakes of Huron, Ontario and Erie, and the Georgian Bay, to the extreme western section of Ontario. The total length of wire is about 15,000 miles. Extensions more considerable than any made heretofore are projected for next season—the policy of the company being rather to anticipate business in a locality than to wait for its development before supplying it with the means of communication with the outside world.—*The Gazette* (Montreal, Canada.)

If we are not wiser than our ancestors both they and we have lived in vain.—*Theodore Tilton*.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Congress and the Telegraph.

WASHINGTON, D. C., January 24.

TO THE EDITOR OF THE TELEGRAPHER.

On Monday Mr. Ramsay, from the Senate Committee on Post-offices and Post-roads, went through the ceremony, which he has repeated so often as to become quite expert in it, of reporting favorably the Hubbard postal telegraph bill. The Committee make quite an elaborate argument in favor of the bill, but as it contains little if anything that is new, or that has not already been controverted in the columns of THE TELEGRAPHER, it is hardly necessary to repeat it in full. The following is an abstract of the bill, as reported—

SECTION 1—Establishes postal telegraph offices at all post-offices on telegraph lines, and at all other post-offices where the gross receipts for postage are \$500 a year, if within ten miles of the telegraph lines.

SEC. 2—Fixes the rates uniform for equal distances: twenty-five cents between offices not over 250 miles apart; fifty cents between offices over 250 miles apart and under 500; twenty-five cents for each additional 500 miles. Night rates, twenty-five cents for 1,000 miles. Rates to be refunded for delays or mistakes in transmission.

SEC. 3—Provides for payment by stamps, and for the destruction of all telegrams within one month.

SEC. 4—Fixes press rates for each 100 words of special despatches at fifty cents by night and seventy-five cents by day. It also fixes rates for press associations and newspapers.

SEC. 6—Defines the duties of the Fourth Assistant Postmaster General over the telegraph lines.

SEC. 7—Authorizes the Postmaster General to contract for the transmission of telegrams at above rates, with parties who will furnish and operate the necessary lines of telegraph.

SEC. 8—Contains provisions against tampering with telegrams, and makes telegrams privileged communications as private letters.

SEC. 9—Authorizes the Postmaster General to reduce the rates in the manner therein prescribed.

SEC. 10—Incorporates the Postal Telegraph Company, for the performance of the postal telegraph service on behalf of the Postmaster General.

SECS. 11 and 12—Authorizes the company to buy existing lines, and obliges it to purchase all such lines, if required by the owners thereof, at an appraised value. It fixes the capital stock at an amount not exceeding the last cost of its lines.

SEC. 13—Authorizes the company to open offices wherever the wants of business may require.

SEC. 14—Authorizes Congress to purchase the lines at any time at an appraised value.

SEC. 15—Reserves to Congress the right to alter or amend the Act.

This is substantially the old Hubbard postal telegraph bill, and as it has passed the Senate before it is not improbable that it will pass again. It is, however, exceedingly improbable that it will pass the House, which has already rejected it once, and which, notwithstanding the continued and earnest efforts of E. B. Washburne, and subsequently of his brother, Gen. Washburne, could never be induced to see its virtues or look favorably upon it. It is an effort to do indirectly what it has been found impossible to obtain Congressional or popular approval for doing directly by the Government. Mr. Hubbard thinks that the passage of this bill would make him the telegraph autocrat of the country, and would prove vastly profitable to him and his associates. The actual result would be that in three years the whole party would be bankrupt, and the Government would be compelled to take the lines and assume the losses consequent upon the business.

CAPITOL.

Association Must Come, but should be With, not Against Existing Companies.

January 14.

TO THE EDITOR OF THE TELEGRAPHER.

How refreshing is the clear ring of that many toned bell, "Association!" Yet that bell has but one true key-note. No association will benefit us which goes outside of the company's welfare. No concessions which may be forced from the company can do us any permanent good. Remark—I say permanent good. It is not pleasant to grant that which they grant only because they cannot help themselves. Even admitting a perfect offensive and defensive union as possible, it would be only temporarily so. What are the chances of so perfect a union? Have any of us known of a corporation which has permanently been dictated to by its employes? The most complete independent association the world has seen contains for me no desirable features. The whole principle is bad—it lacks humanity, and it tends to destroy the very feelings which, between us and the company, ought to be cultivated. We must build up, not tear down. The weeds will have to succumb when the plants become hardy.

I am not surprised to see so early a strong tendency towards independent union. The fraternity is being

agitated. The scum must come rapidly to the top. Men who will not risk their money, but will talk loudly as to how the thing can be successfully accomplished, will speak first. The body of the material will be slow to action. Men whose opinions will be worth hearing, and whose characters will give strength, may not be expected to speak for months. When the movement shall have set in, and in the right direction, the march will be slow. Each step must be well considered, and only one step at a time undertaken. Any one who feels he is part of the scum, as here indicated, must be content to be skimmed off and try it again. There is some good material in the scum; do not be discouraged. This subject will bear months of discussion, and finally a Convention, composed of one or two of the best men from each district, before any plan is set on foot. I will not surmise just how that Convention is coming about, but feel that it must come. The company cannot much longer afford to be without the counsel of its best operators, managers, book-keepers and others.

Now, as to the independent union, I would say in all candor, let it be the last resort, not the first, and let no one be a member who is also an employé of the Western Union Telegraph Company.

Double dealing will not succeed. An independent union, on the right plan, is one which will build and operate its own lines. Any other is indefensible, and this would be only a new company.

This will do when the right kind of coöperation and service-graduation-policy have failed. I am with you on that if two years don't start the right move within and between the company and the employes.

P. S.—Since writing the foregoing I have thought to call the attention of all to the hopeful signs contained in the *Journal of the Telegraph* of Jan. 1st. The dawning of a new era is plainly acknowledged in the editorials. But the paper contains even better proofs. Read it.

Heavy Storms and Telegraph Prostration.—The Brooks Insulators.—The Legislature and the Telegraph.

SAN FRANCISCO, CAL., Jan. 10.

TO THE EDITOR OF THE TELEGRAPHER.

DURING the past month we have had very heavy storms all over the Pacific coast, more rain and snow having fallen than for any winter during the past ten years. At the beginning of the storm the telegraph lines all over the coast were badly prostrated; but, although the storm has continued without abatement to the present time, communication with the East has been maintained. The Atlantic and Pacific Company, which uses Brooks Insulators, have at no time been unable to work as well and reliably as in the summer, excepting, of course, during the first few days, when all the lines were prostrated. During the heaviest rain the A. and P. wires were worked from San Francisco to Ogden, a distance of over 1,000 miles, with scarcely any perceptible change.

No bill has, as yet, been introduced in our Legislature granting any privileges to the China Cable Company, but one is expected to be introduced at the present session, which began on the first Monday in December last. It had not, however, got fairly organized and at work before the adjournment for the holidays took place.

Senator Perkins introduced in the State Senate resolutions instructing the Senators, and requesting the Representatives from this State, in Congress, to favor the postal telegraph scheme. These resolutions have not as yet been acted upon, and as they are generally opposed by the influential newspapers here, it is doubtful if they can be passed. When the Pacific coast was entirely dependent upon the Western Union Telegraph Company for telegraphic communication with the East, any scheme which would have relieved us of the monopoly would have been favorably received here; but, now that competition has been established, the necessity for Government interference is recognized as having ceased.

ALCATRAZ.

How a Telegraphers' Association may be Formed.

PARKER'S LANDING, PA., Jan. 9, 1872.

TO THE EDITOR OF THE TELEGRAPHER.

WE have been reading with considerable interest the articles in your (I might with pride say *our*) paper in regard to a telegraphic union, and think the views held forth by "Alabama" very sensible.

I am sure all those who would do any good in and for the union, in a time of emergency, would be ready and willing to advance the sum he mentions.

It is a reproach to the profession that we should be without an organization, not only for protection but for the advancement of the profession, and the mutual improvement of telegraphers generally. Why cannot we, as well as the locomotive engineers, railway conductors, etc., have an organization? They are both powerful organizations. I think there are as many telegraphers in the country as there are conductors, and as they have made their association a success, why should not we?

We certainly have the brains, and, as "Alabama" says, we should be willing to advance the cash. There is one thing certain, we never can make the association a success without money, and it is just so certain that

we will never make it a success by *talk*—we want action, energetic, persistent action! Let some one take the lead. Why don't some of the older men in the profession start it? I am young, both in years and in the business, but if some of the older heads will start it they will find enough to rally to their support.

The plan of "Sic Semper Tyrannis" seems to be a very good one. Let each circuit appoint one or more delegates to meet in Convention in the larger cities throughout the country, then let those District Conventions appoint delegates to meet at some central point in one grand Convention, and there start a national organization, that I fondly hope will spread far and wide, and embrace all the members of the profession in the country. The great trouble with this association business is, we are all waiting for some one to take the lead—so let some one come out. There are men enough in the business eminently qualified to organize and maintain an association, and there is no doubt but that they will find followers. Where are the master spirits of the old T. P. L.? I hope their former bad luck has not frightened them out. We would like to hear from some one of them.

EAGER.

The Telegraphers' Association.

TO THE EDITOR OF THE TELEGRAPHER.

"UNION" has opened his key to speak in regard to the proposed Telegraphers' Association. I have been listening to all this discussion without remark, but will take circuit now to say that I agree with him, so far as that we should not spend more time in *talk* than is necessary to *insure a fair understanding* of what we propose to do before we commence. We should have *speedy action*. Let all, then, send up their reports, so that we may see just where we stand. Let those who have suggestions to make send them in. Each individual sees things from a different standpoint, and each may observe something of importance which is overlooked by the others. Then, let all who feel an interest in this matter forward their views and suggestions for consideration.

In my opinion, the remarks of a correspondent in No. 20 of the current volume of THE TELEGRAPHER are very pertinent. If we would have passengers embark in our craft with a feeling of security we must be prepared for squalls, though we may hope and expect smooth sailing. We require a fund to fall back upon in case of trouble. Without financial resources we are weak in the hands of companies and combinations of capitalists. I think well of his suggestion to make the fee for admission to membership, of any association that may be organized, a high figure. It will pay telegraphers to invest the money. Let us also work hard to increase our funds by other means. We can institute periodical entertainments of a social character in different localities at times, and other opportunities might be afforded by which the public, who would undoubtedly give us their sympathy, may manifest it. If we but get our financial basis right we need not dread other obstacles to the accomplishment of our legitimate purposes. This is a matter which concerns all telegraphers, and there should be a general response.

JERRY.

Personals.

Mr. JAS. FAULKNER has resigned his position in the Pacific and Atlantic Louisville, Ky., office, and accepted a situation in the Western Union office, same city.

Mr GEO. A. HAYWOOD has resigned from the Louisville, Ky., P. and A. office, and goes to Detroit, Mich.

The Telegraph.

By Cable.

PETITION FOR REDUCTION OF TELEGRAPH CABLE CHARGES.

LONDON, Jan. 23.—The Liverpool Chamber of Commerce has addressed a memorial to the Post-office Department, asking for a reduction of the tariff on cable messages.

PROSTRATION OF TELEGRAPH WIRES.

LONDON, Jan. 24.—A severe storm commenced here yesterday evening and lasted all night, raging with great violence. The gale at times became a hurricane. Telegraph wires are prostrated in various directions, and communication interrupted.

Insulation of the Anglo-American Telegraph Cables Failing.

The following important official communication, in regard to the decrease of insulation of the Anglo-American Atlantic Telegraph Cables appears in the London papers:

"No. 26 OLD BROAD ST., LONDON, Jan. 10.

"SIR—The attention of the Directors having been called to certain rumors affecting the condition of this company's cables, they consider it their duty to inform their shareholders that, according to the results of the tests reported by the company's superintendents at Valentia and Heart's Content, the insulation of the cables, both of 1865 and 1866, shows a considerable decrease. It is proper, however, to add that this decrease

of insulation does not at present interfere with the regular and rapid transmission of messages. With a view of ascertaining more accurately the exact condition of the company's cables, the directors have determined to send Mr. Willoughby Smith to Valentia, to supplement the tests made by the company's superintendents.

"I am, sir, your obedient servant,
"JOHN GRANT, Secretary."

The Telegraph in Brazil.

A BRAZILIAN correspondent of the *New York Tribune*, under date of Rio de Janeiro, December 7th, writes as follows in regard to telegraph matters: "Our latest news from Chile, reaching down to the 16th of November, is to the effect that the Andes telegraph line is completed as far as S. Felipe. The necessary steps for continuing the work of laying the subterranean cable in the Cordilleras have been taken, and the work will go forward rapidly. To this end a great quantity of material has been distributed at different points along the proposed line. The line will be opened in February next. That portion which is to pass the Cordilleras underground will be completed this month. Here in Brazil absolutely nothing has yet been done in this respect, and even the working of such short and imperfect lines as are in existence is a simple farce. One would think that a coast line, connecting the cities of Bahia and Pernambuco with the capital, would have been established long ago; but, although a concession was granted for such a line over a year and a half ago, and although those who hold that concession must have the line finished and working throughout its whole extent before September, 1872, on pain of forfeiting the concession and \$20,000 deposited in a London bank, still not the first step has yet been taken in the matter. The Ballestrini concession, granted several years ago, for the laying of a submarine cable between Lisbon and Brazil, at last begins to show signs of life. Yet Mr. Hooper must look sharp, for the Ballestrini concession will also expire with the 31st of August, 1872. Some enterprising Americans here are considering the feasibility of building a line direct across the continent, taking in Assumption, and so connecting Rio with the Pacific coast line, which, as the right arm of the West India line, is to be in direct communication with the United States."

New Cable Schemes.

THE American Atlantic Cable Company will probably begin at an early day to lay a cable from the extremity of Long Island to a point on the English or Dutch coast. This Company was incorporated under the laws of this State by an Act passed May 7, 1866. An Act of Congress was passed March 29, 1867, which conferred the right to lay a cable from any point on the Atlantic coast except in Florida. The company also received a grant from the King of Holland, in 1869, to land a cable on the coast of that country, and permission from the English Government, in 1870, to land a cable on the British coast. The incorporators of this company are A. F. Millwarth, Edward Haight, Senator Pomeroy, Willis Gaylord, Paul M. Spofford, and E. M. Birdseye. The capital stock is \$10,000,000—a large portion of which has been issued. The company has authorized an issue of bonds secured by mortgages to the amount of \$6,000,000 principal, and interest at 7 per cent., payable in gold, in twenty years from November 1, 1870. This company purposes to have two cables, one direct to the coast of England or Holland and the other by way of the Bermuda and Azore Islands to the coast of Portugal. The agent, whose arrival from Europe is daily expected, has received proposals from two English houses in regard to the manufacture of the cable, and if the company decide to accept the propositions, operations will be begun without delay.

A proposition is now before the Legislature of California to grant permission to a company to lay a cable from San Francisco to a port in China. Cyrus W. Field and others are connected with the project, and it is believed that the measure will be passed at the present session of the Legislature, and that the work of laying a cable will speedily follow. This will complete the telegraphic circle around the world.

The Georgia Legislature has also granted to certain persons the privilege of laying a cable from that coast to a point in France; but as Congress has jurisdiction beyond low water mark, it is doubtful whether any advance can be made until the matter has been acted upon in Congress. Several additional cable enterprises are advocated, but the schemes have not assumed definite form.—*New York Tribune*.

Foreign Telegraphic Notes.

THE *Railway News*, of London, states that "the secretaries of the Anglo-American and French Cable Companies officially announce that they have had no communication with the Government of this country or of the United States relative to the sale to them of the existing cables. We are glad to hear this disclaimer on their part. If the directors of these companies have an ordinary amount of common sense, they will not put themselves forward as desirous of parting with a property which every year must increase in value. At present all that appears to be done in the matter is in the direction of the formation of a public opinion, of which the Governments of the two countries will, no doubt, duly avail themselves when they consider the

proper time has arrived. Meanwhile, in the interests of the shareholders, we hope that the directors will not, by taking the initiative, and putting themselves forward as sellers, depreciate the value of the property, the purchase of which may, at no distant day, be proposed by the joint Governments."

The total number of messages forwarded from postal telegraph stations in the United Kingdom during the week ended December 30, 1871, was 182,929—an increase of 38,883 over the corresponding week of the previous year.

The Government of Tasmania, at the request of a deputation from the Australian Associated Press, has promised to lay before the Parliament of that colony a bill to make the English news dispatches of the Association copyright for forty-eight hours, and to communicate with the Governments of the other Australian Colonies with the view to simultaneous action.

Telegraphic Brevities.

THE Chicago and Iowa Railroad Company have just completed a telegraph line from Aurora to Forrester, which will be managed in the interests of the railroad and entirely independent of any telegraph company.

The Montreal Telegraph Company has declared the regular semi-annual dividend of five per cent. on the stock of the Company for the six months ending Nov. 30, 1871, payable on and after January 12th, inst.

The Assembly of Wisconsin, on Tuesday last, adopted a resolution requesting the Senators and Representatives in Congress from that State to use their most efficient efforts to procure the passage of the postal telegraph bill.

At San Francisco, Cal., on Tuesday last, the members of the Japanese embassy visited the Western Union Telegraph office, and were shown the operations of the telegraph, and the wires were connected through and they were enabled to communicate direct with the Secretary of State at Washington, with Prof. Morse, President Orton and others in New York, and with the sons of the Chief Ambassador, Prince Iwakura, now attending school at New Brunswick, New Jersey.

Robert Burns has a law office on the principal street of Kalamazoo, Mich., and William Shakespeare keeps a bookstore next door.

New Patents.

For the Week ending January 9, 1872, and each bearing that date.

REISSUE.

No. 4,704.—ELECTRO-MAGNETIC SAFE PROTECTOR. William Duncan, Lebanon, N. H., assignor, by means assignments, to himself, C. O. Rowell and Aaron H. Cragin. Patent No. 117,713, dated August 1, 1871.

1. In combination with a safe or vault for the protection of valuables the following elements, namely, an electric circuit and an alarm apparatus, so constructed and arranged in cooperative relation to each other that a break or perforation through a plate or plates of the safe, or the opening of the door of the safe, breaks the circuit and operates the alarm, substantially in the manner described.
2. A safe enclosed or partially enclosed, with wall provided with air spaces, and having combined therewith an electric circuit and an alarm apparatus, so constructed and arranged that a break or perforation through the inclosing hollow walls will break the circuit and operate the alarm.
3. The combination with a safe, an electric circuit and an alarm apparatus, of the air chambers, exhaust pipes, and expanding and collapsing disks, constructed, arranged and operating substantially in the manner described.
4. The employment, in connection with a safe, an electric circuit and an alarm apparatus, of a collapsible disk, constructed and operating substantially in the manner described.
5. The construction and arrangement of the circuit closing and breaking mechanism shown at figs. 1 and 2, substantially as described.

Recent British Patents.

No. 2,108.—G. Haseltine, Southampton Buildings, London. ELECTRO-MAGNETIC APPARATUS FOR PROTECTING SAFES. Dated November 16, 1871.

1. An outer safe, so connected with an electric circuit and an alarm apparatus, that the opening of the door or the perforating of the outer plates will operate the alarm apparatus.
2. Combining with the safe an electric circuit and alarm apparatus, a cable, or compound circuit wire, and a series of magnetic coils and armatures, so that the breaking of the circuit of any coil will set the alarm in operation.
3. A novel construction and arrangement of the circuit closing and breaking mechanism.
4. The combination with a safe and electric circuit and alarm apparatus of inclosing walls or plates with spaces between them, from which the air is exhausted, so that if a perforation is made in the rush of air will sound the alarm.
5. Constructing the inclosing plates or walls in sections, and connections by tubes or air channels.
6. The combination with an electric circuit and clock work, operated by the same, of double gongs.
7. The combination with an electric circuit and clock work, and the double alarm gong which operates intermittently.
8. Providing the clock work with two or more driving springs.
9. Constructing the door or other part of the alarm box of a series of perforated plates, arranged to prevent access to the clock work.
10. Constructing the door of the alarm box with a movable perforated plate and a stud, so that if the plate be moved the alarm will be rung.
11. The combination with an electric circuit and alarm apparatus of a lock, to lock the alarm box and control the clock work.
12. An alarm box in connection with an insulated safe and electric circuit.

Married.

PRAT—SAMMIS.—In Sacramento, Cal., January 1, 1872, by the Rev. F. L. Nash, Mr. HARP L. PRAT, of the Atlantic and Pacific Telegraph office, to Miss GRACE K. SAMMIS, of San Francisco.

MIXER—CHAPMAN.—At Rochelle, Ill., January 16, 1872, at the residence of Mr. George F. Northup, Mr. CHARLES L. MIXER, manager of the Western Union Telegraph office at Geneva Lake Wis., to Miss MARIA A. CHAPMAN, of Phoenix, N. Y.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.

FRANK L. POPE, Associate Editor.

SATURDAY, JANUARY 27, 1872.

Telegraph Strikes and their Results.

THE recent strike of the English telegraphers, although directly a failure, is likely to accomplish the objects for which the Association—considered so objectionable by Mr. SCUDAMORE that several weeks of his valuable time was devoted to detecting and destroying it—was organized. It should be borne in mind that in England, as in the United States, this memorable movement was not caused by any action of the Association, but by the attempt to suppress it on the part of the telegraph authorities. The Association in England, and the Protective League in this country, were both organized for the purpose of securing justice and fair treatment to telegraph employes. Both were, necessarily, secret organizations at their inception, and both were probably betrayed by some unprincipled member, who sought, by such treachery, to secure favor and preferment from his superiors.

Although apparently failures at the time, and resulting in the disbandment of the organizations, these occurrences called the attention of the public and of telegraph managers to the injustice to which the employes were subjected, and indicated the danger which existed of the interruption, at any time, of telegraphic communication through the disaffection of telegraph operators.

In England a portion of the reforms which the employes sought to accomplish have been already established. Some of the promises which were made to them at the time the telegraphs were transferred to the Government, and which had been persistently ignored by the Post-office authorities, have been performed. The press and the public have had brought to their attention the injustice and bad faith towards the telegraph employes of Mr. SCUDAMORE and the postal authorities, and demand that these shall cease, and that even telegraphers shall not justly continue to be popularly stigmatized as "Post-office niggers." The action of Mr. SCUDAMORE, in assuming a censorship of telegraph despatches during the strike, has called attention to the practical despotism which was being established in the management of the telegraphs, and will eventually secure the much needed restrictions and reforms. Thus, what at first seemed to have been a futile and abortive demonstration on the part of the telegraphers, is likely to result in great permanent good.

Another service which has been rendered by this movement, but which was of course not contemplated by either party, is the *quietus* which it has put on the postal telegraph schemes in this country. The actual result of placing this great power in the hands of Government officials has been demonstrated in so conclusive a manner, as to furnish an unanswerable argument to those who are opposed to a centralization of power in the hands of any administration, such as the control of the telegraph would effect. It has also shown to those telegraphers who have heretofore favored a postal telegraph, with the idea that they would receive better treatment and more liberal compensation, what might be expected were their interests intrusted to political Government officials. The only safety or security for just treatment of telegraph employes is in competition in the telegraph business. A Government monopoly would prove no better than a private monopoly, and would in fact be worse, as there would not be the possibility of competition interfering in case of abuse and mismanagement.

We have before remarked how singularly the inception, progress, management and termination of the strike in England repeated the history of the strike of the Western Union operators in this country; and now in its results the parallel seems likely to be completed. The Western Union operators' strike, although ap-

parently a failure, really accomplished very much for the employes. The original purpose of the Protective League was to prevent a reduction of compensation. No decrease of pay has taken place, though when the League was organized a general reduction of salaries was contemplated. Telegraphers have been treated more fairly since, and their complaints and applications have received much more consideration than formerly. That there is yet room for great improvement there can be no doubt, nor that many evils yet remain to be corrected. If telegraph managers so desire, all these matters may, through concert of action, be amicably arranged.

We are not, and never have been, an advocate for strikes, unless they are forced upon the employes. We have much doubt whether, except in extreme cases, a strike is the most effective argument which can be employed to secure a recognition of just and reasonable claims; but when, as in the instances which we have discussed, such a movement is forced upon any body of employes, it must take its course, and the apparent is not always the real result.

Automatic Telegraphy.

As much interest is felt at the present time in this country, especially among all who are interested in the telegraph business, in regard to automatic telegraphy, we reprint on the first page of this paper a very good illustrated description of the automatic telegraph of Prof. WHEATSTONE, used quite extensively by the Postal Telegraph Department in Great Britain. It is claimed that, with the WHEATSTONE puncher, forty words per minute can be prepared for transmission, but we think that this is considerably in excess of the speed attained in actual practical use. The great obstacles to be overcome in realizing the anticipated advantages of the automatic system are the delay in preparing the strips for transmission, and the messages for delivery at their place of destination. There is, no doubt, now, of the practicability of transmitting the signals at any desirable rate of speed, and on circuits of at least the usual length.

As is generally known to our readers and the public, the Automatic Telegraph Company, whose headquarters are in this city, have, for the past two or three years, been experimenting with a view to obtaining better and more satisfactory results in automatic telegraphy. We think now that they have made considerable progress, and are very much in advance of the English system in the preparation of the transmission slips, the puncher used by them being capable of very much greater rapidity; and they have secured a printer for preparing the despatches for delivery superior to anything of that description which has as yet been presented. The apparatus for transmitting the signals over the line is also much superior to the English apparatus, and of a capacity at least five times greater than WHEATSTONE'S. It is worked on the chemical system, by which means magnets are dispensed with, and the limitation of speed consequent upon the use of magnets is done away with.

We shall watch the development of the system here, and shall record its progress in the columns of THE TELEGRAPHER from time to time with much pleasure. We are in favor of all real improvement in telegraphy, and have no interests antagonistic to such improvements, or old foggy ideas to be overcome.

The "Tribune" Almanac.

THE *Tribune Almanac*, published by the *Tribune Association*, New York, for 1872, contains, in addition to the astronomical matter, calendars, etc., common to almanacs, the usual mass of political information, of great value, and almost indispensable to those who take an interest in public affairs. It has been compiled with great care, and no labor or expense has been spared to make it complete and accurate in all its departments.

The Hubbard Postal Telegraph Bill again Reported.

As stated in the communication of our Washington Correspondent, CAPITOL, the HUBBARD Postal telegraph bill was reported from the Committee on Post-offices and Post-roads to the Senate, on Monday last, by Senator RAMSAY. The bill, as reported, is substantially the same as has heretofore been favorably acted upon by the Senate and rejected by the House. If it

is acted upon at all at the present session, it will no doubt meet with a similar fate. It is even more objectionable than the postal telegraph system, pure and simple, and proposes to do indirectly, and without regard to the rights and interests of existing telegraph companies, what it is evident the people do not favor being done directly through the Government telegraph system recommended by the President and Postmaster General.

The "Public Ledger" Almanac.

WE have received from the publisher, Mr. GEORGE W. CHILDS, the *Public Ledger Almanac* for 1872. It is handsomely gotten up, and contains much valuable information. It is not intended for sale, but is furnished to each subscriber to the *Public Ledger*, of Philadelphia, and to its contemporaries throughout the country, by its liberal and enterprising publisher.

Annual Meeting of the American Compound Telegraph Wire Company.

THE annual meeting of the American Compound Telegraph Wire Company was held at the office of the company, in this city, on Tuesday, January 23d. The old Board of Directors were reelected unanimously. The prospects of the company were reported as satisfactory, and encouraging for the future.

At a subsequent meeting of the Directors the following officers were elected for the ensuing year: President, Chester Snow; Secretary and Treasurer, Alanson Cary; Electrician, Moses G. Farmer.

The Humors of the Telegraph.

OUR well and favorably known correspondent, LEW OGDEN, sends us the following contribution to the humorous department of THE TELEGRAPHER:

That mistakes will occur in the best regulated families is an acknowledged fact, and we must confess that the rule also holds good as regards a certain class of operators claiming to be first class.

We purpose recalling to our memory a few of these oddities and putting them on paper, for the amusement of the many readers of THE TELEGRAPHER.

The word "amusement" brings to mind a rather ludicrous error, made by a Montreal operator last summer. A well known commission merchant of Toronto telegraphed to a Montreal firm—"Butter lower in the country. Am using the wires." From the tenor of the message the receivers were led to believe that Mr. Walker was "amusing the wires."

The smiling face of "Sony" Henrich is familiar to all the old operators from San Francisco to New Orleans. "Sony" is one of the boys, and a good operator, but not infallible. Not long since, in receiving a message from Chicago, the word "personally" occurred after the signature, and very naturally Jim got it "per S. O. Nally." The erring operator did not hear the last of this till one of his collaborators transferred an office message reading, "Get answer to a message signed, &c." into "Get answer to Ames Sage, &c." Shortly after the Chicago fire the same operator received an American press despatch, stating that, despite the cold weather, laborers were going on with the work of rebuilding by the aid of wires. Is it necessary to explain that fires was the word intended?

Though telegraphers are no doubt responsible for numerous errors, quite a number are also to be attributed to the miserable manuscript furnished by customers. The following is a case in point: A dutiful son, whose maternal parent was about to take a journey, wired his family that he would "Melt mother at Harrisburg." He did not add whether he would turn over the proceeds, after the sacrifice, to the soap fat man or not.

A well known Western sporting man, who visited Europe to witness the memorable fight between Sayers and Heenan, received a telegram just as the vessel was leaving, requesting him to telegraph the state of the betting. Our sporting friend, in his hurry, put the message in his pocket, and did not think of it again till the steamer was well out to sea. After the fight he made a tour of the Continent, and returned to America after about a year's absence. Immediately on his arrival in New York he proceeded to the nearest telegraph office and sent the following: "5 to 4 on Heenan. Slow but sure." The receiver's faith in Morse is shaken—in fact he, to this day, stoutly maintains that the mail can beat the telegraph and carry weight.

Cold blooded telegrams are numerous; but, in our estimation, the Pennsylvania politician who telegraphed his father "I have 2,000 majority—brother Sam died this morning," ought to be made the chief object in a first class funeral.

AT Demerara telegraphic communication between Georgetown and Berbici was opened on the 25th of November. The office of the company was for the present at Plantation Blairmont, on the west bank of the river, owing to the cable across the river being defective, and messages were conveyed by the ferry boat to New Amsterdam. On the cable being put in proper order the office will be removed to New Amsterdam.

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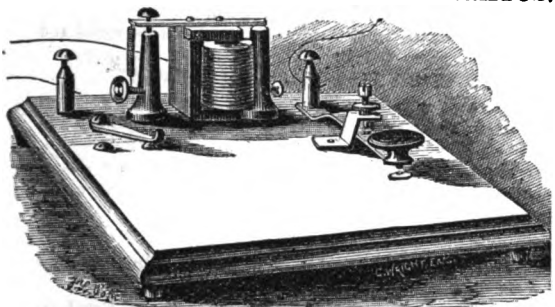
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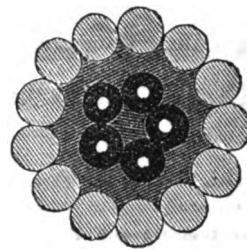
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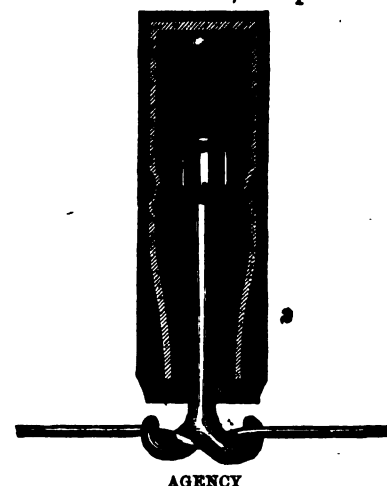
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Original Articles.

Automatic Telegraphy.

DURING the past two years the public has been regaled from time to time, through the press, with statements of the wonders about to be accomplished in the way of automatic telegraphy. It was asserted that, through the agency of this old invention, modern telegraphy was to be completely revolutionized, and all the existing telegraph companies, from the Western Union down, utterly annihilated.

Such were the predictions, or rather the promises and boastful threats sent forth to the public, and dinned into the ears of members of Congress and the high officials of the Government—first by the defunct National Telegraph Company, of New York, and subsequently by the Automatic Company, successor to the *debris* of the late National Company. Honorable Senators were amazed, members of Congress who owned stock in the Western Union were frightened, and the general public were astonished; but there was always a smile, if not a laugh of incredulity, when they were informed by the emissaries of the Automatic Company that from 500 to 1,000 words per minute were to be transmitted over one wire to any distance. Furthermore, this Automatic Company proclaimed itself the sole and exclusive proprietor of automatic telegraphy, in principle and theory. This and much other nonsense has been proclaimed and published in behalf of this claim to the exclusive right to automatic telegraphy in all its modes and phases. Now let us examine the modest claim of this company to the exclusive right of using the automatic system.

Automatic telegraphy was invented by Alexander Bain, of Edinburgh, and patented by him in Great Britain in 1846. In 1849 Bain's application for a patent in the United States was refused by the Commissioner, on the ground of infringement upon the Morse patent. Being induced by Henry O'Reilly to appeal to the Supreme Court, the decision of the Commissioner was overruled and the patent ordered to issue to him. A line operated on Bain's system was completed between New York and Boston in 1849, and others were subsequently built to Washington, New Orleans, Cincinnati, Montreal and other points. Here, then, was the Bain system in active operation throughout the land. We must now see what that system was.

Bain did not make use of the electro-magnet in recording communications. They were received upon paper prepared with a solution of cyanide of potassium, moved beneath an iron stylus connected with the line wire. The electric current from the transmitting battery decomposed the point of the stylus, producing blue lines upon the paper corresponding to the dots and dashes sent by the transmitting apparatus. Bain's method of rapid-writing, at the speed of 5,000 words per hour, and which is described in his English patent of 1846, consisted in perforating long narrow strips of paper with dots and dashes, constituting the telegraph characters of a despatch. This was passed between rollers driven at any required speed by clock work or otherwise, the battery connection with the line being made by a small metallic comb, which came in contact with the roller beneath through the perforations in the moving strips of paper, thus forming an automatic transmitter. The dots and dashes recorded electro-chemically upon the received strip were, of course, an exact *fac-simile* of those in the perforated transmitting strip.

In 1850 Dr. Lardner and M. Leverrier, the celebrated astronomer, were in Paris at an experiment, an account of which is given in page five of Lardner and Bright's work on the Electric Telegraph. A message of 282 words was transmitted and written in fifty-two seconds, or at the rate of 19,500 words per hour, through a circuit of 336 miles of telegraph line, and 746 miles of insulated wire in coils, making a total of 1,082 miles.

This brief history of automatic telegraphy shows that the system itself is open to the world. If any company chooses to adopt it there is nothing whatever to prevent it. It is a well known fact the automatic process was the original mode devised for the first demonstration of a strictly telegraphic result.* It is also well known that Morse patented several methods of

recording by electro-chemical decomposition. Wheatstone, in England, also used the automatic process, using perforated paper and a transmitter, as well as chemical paper, for recording the communications. Enough has been said, however, to prove that the punched paper, the chemically prepared paper, and the automatic transmitter and receiver—in a word, the whole system—is no new invention or discovery.

Professor Morse, in his valuable report to Congress on the telegraphic apparatus at the Paris Exposition, in 1867, thus writes on the subject of speed of transmission:

"The immense rapidity of the passage of the electric current suggests that there is scarcely a limit to the quantity of intelligence that might be transmitted in a given time. Theoretically, indeed, any speed yet attained could be increased, almost indefinitely; but this speed is limited not by the speed of electricity but by the action of the necessary intervening mechanical instrumentalities; and it is precisely here that the ingenious *savant* and mechanician find a profitable employment for their research and skill in modifying and improving the automatic process."

The speed at which perforated paper may be passed under the stylus is almost illimitable. It is not the rate of transmission which presents the great difficulty in automatic telegraphy, but the preparation of the perforated transmitting strip.

Professor Morse, in his report above cited, mentions a perforating machine made by Siemens & Halske, of Berlin, which has been used on the Prussian telegraphs for ten years past. It is termed a "key-board puncher." Each letter is completely finished as soon as the corresponding key is touched; and he states that one operator can prepare for transmission by the machine 2,400 words per hour. The same parties have a transmitter which sends the same number of words per hour over a distance of 2,000 miles. There is another paper punching machine invented by Thomas Allen, of London.

Having thus clearly shown that the automatic system is not a new one, and that its use is now free to all, let us examine the position assumed by the Automatic Telegraph Company, of New York.

The records of the New York State Department show that the certificate of incorporation of this company was filed on the 5th of December, 1870, the incorporators being George Harrington, William P. Mellen, Daniel H. Craig, Josiah C. Reiff and John Elliott. Capital stock, \$13,000,000. Line to connect New York, Philadelphia, Baltimore and Washington.

We would not insult the common sense of the above gentlemen by stating that they, in so many words, claim the exclusive right to the use of the automatic system, but the mere statement that this method is to revolutionize the telegraphic system of the world, and annihilate all existing telegraph companies, conveys to the mind even a stronger impression of the fact than the claim itself could do. Otherwise, if experience should demonstrate this to be the best system, could not, and would not all other telegraph companies adopt it?

If this company, then, have not the sole right to the use of the automatic system, upon what basis do they found their hopes (if they really entertain them) of annihilating all existing companies? Is this company in possession of all the necessary machinery to operate the system of so perfect a description, and so secured by letters patent that the inventive genius of the world cannot produce anything to compete with it? If it be true that the ingenuity of man has been exhausted in the production of this much boasted of machinery, then, perhaps, we must yield to them the control of telegraphy throughout the world. But let us first examine the validity of this claim.

Mr. George Little, of New Jersey—a thoughtful man and an experienced electrician, but an inventor—is the prime mover and mainstay of this company. Several years ago he patented an electro-magnetic perforating machine, which is simple and reliable in its operation, and which can be used by a child at first sight, but the most experienced operator cannot perforate with it more than twelve words per minute. In 1869 Mr. Little patented a transmitter, driven by an electro-motor—ingenious, simple, practical, and capable of great speed—which can easily transmit from 500 to 800 words per minute. Its principal defect is

that the electrical contact is made by the stylus, through the perforations upon a drum making from 500 to 800 revolutions per minute, the centrifugal force of which is so great as to tend to throw off from its surface all objects coming in contact with it. Thus the stylus is thrown off unless kept in place by a spring adequate to overcome the centrifugal force, and the latter exerts a pressure upon the perforated strip which seriously retards its movement. A still greater pressure must necessarily be applied to the friction wheel which draws the paper, and this again greatly retards the movement of the drum.

It is evident that this, then, cannot be the machine which has exhausted the ingenuity of man, and secured to this company the monopoly of automatic telegraphy.

The next and most important machine is the perforator patented by Mr. T. A. Edison. This is a very pretty machine in the estimation of persons ignorant of mechanics, but the eye of an expert detects radical defects in every part. It would be useless to point out these defects to those who have not seen the apparatus. It is sufficient to say that each letter is completed by striking its corresponding key, and a good operator, who has practiced on it for six months, can prepare 35 words per minute, provided no accident happens to it, but unfortunately this is far from being the case. The paper tears in the punches, letters often fail to cut, the springs of the paper feeders break, a pin comes out here and a screw there, and it is safe to say that not more than one out of three perforating machines in an office would be available at any one time. In fact, the machine is utterly unreliable.

The chemical paper, upon which the message is received upon arriving at its destination, is wetted with a solution claimed to have been discovered by Mr. Little, and the astounding secret of which he keeps in his own bosom. All we know about it is that the action of an electrical current upon it is instantaneous, at a speed of 800 words per minute over a circuit of more than 600 miles. The marks are of a brown color, but they fade out and become illegible in about one hour. It is also stated that a gallon of the solution, which will saturate enough paper to receive thirty thousand words, costs nineteen dollars.

Then, again, this would-be monopoly has had a printing machine invented and constructed by Mr. Edison, upon which to copy messages for delivery upon their arrival. When this machine is in working order—which it is occasionally—it is capable of printing sixteen or eighteen words per minute, in the hands of a trained operator.

We will not allude to the immense cost of these perforating and printing machines, for we do not desire to deter the public from investing in the stock of the company.

These, then, are the machines which it is claimed will give this company the monopoly of telegraphy. We bear cheerful testimony that the Little machine has, in our presence, transmitted at the rate of 500 words per minute between Washington and New York. On the 27th of September, 1870, a despatch of 566 words was sent from Washington to Buffalo, dropping copies at New York and Albany, in one minute and twenty-eight seconds, being at the rate of 386 words per minute in a circuit of about 750 miles. But, in regard to the Edison perforators, we cannot refrain from giving testimony, after four months' experience with them in an office, that they are constantly out of order and entirely unreliable. With three perforating machines in an office not more than 30 or 40 words per minute could be relied on for any length of time, say two or three hours.

The Edison printer is a splendid failure—splendid in its cost, and in its mechanical defects, and most splendid in its slowness. It is no less splendid in its predisposition to get out of order.

In conclusion, we express our earnest conviction, in which we are sustained by Professor Morse and many prominent electricians and telegraphers, that automatic telegraphy will eventually, in this age of invention and progress, supersede all other systems, at least on the main thoroughfares of telegraphic business. But this automatic telegraph company, with its present machinery, is not destined to accomplish this result. Its costly experience will have the beneficial effect of stimulating the inventive genius of the age, and we

* Shaffner's Telegraph Manual, pp. 406-408.

hope to see machinery invented which will prepare the transmitting paper, and print the messages on their arrival at the rate of at least 100 words per minute, so that with three or four of these machines in each office three or four hundred words a minute can be sent over one wire.

We say now, however, to all telegraph companies or others interested parties, that there are reliable machines in existence capable of perforating 40 words per minute, printers having a capacity of over 50 words per minute, transmitters capable of sending at any required rate of speed, which can be had at less than one tenth the cost of any one of the machines owned by the Automatic Company, and also a chemical solution for the paper costing two dollars per gallon, equally sensitive with that whose secret is so carefully guarded by Mr. Little.

WILLIAM C. BARNEY.

Washington, D. C., January, 1872.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Congress and the Telegraph.

WASHINGTON, D. C., Jan. 31.

TO THE EDITOR OF THE TELEGRAPHER.

ALTHOUGH there has been no action in regard to telegraphic matters in Congress during the past week, there has been some interest exhibited, as shown in the debate in the House on Saturday last on the postal telegraph schemes of the President and Postmaster General, and of Mr. Gardiner G. Hubbard.

Mr. Beck, of Kentucky, made a very able and exhaustive argument against both, and against all plans for bringing the telegraph under Government control. He was a member of the Select Committee of the last Congress, and was then, as now, after a thorough examination of the whole subject, opposed to both the postal telegraph and Hubbard schemes, which were before that Committee.

The limited space which can be afforded in the columns of THE TELEGRAPHER will not suffice for even a synopsis of this carefully prepared exposition of these schemes. One point was made, however, which cannot be controverted, and which has a most damaging if not fatal effect upon what little vitality was left in the several Government telegraph projects. He showed that already a censorship had been established over telegraphic communication in England, and contended that it would be done here whenever political or other exigencies required it. He contended that the whole scheme was an effort to still further centralize and consolidate all power in the hands of the Government officials at Washington; that the present Postmaster General was an unfit depository of such enormous power as he recommended and urged Congress to confer upon him; that his scheme would cost the country at least \$60,000,000 of outlay to begin with, and an annual tax of \$10,000,000 to sustain it; that it would add at least 25,000 additional employes to the 65,000 or 70,000 now drawing salaries directly from the Treasury, as the official register showed; that these men would be compelled to be subservient political tools to the Postmaster General, obey all his orders, pay their political assessment, and do his dirty work or be discharged. He charged that the cost of the service here and in other countries had been misstated and concealed by the Postmaster General, to induce Congress to confer this power, coupled with a great banking system, upon him.

Mr. Dawes, who is understood to be rather favorable to the Hubbard scheme, but inflexibly opposed to that of the Postmaster General, replied to Mr. Beck; while he did not see clearly any relief in the details of the Hubbard plan, he saw in it, he said, the dawn of some relief.

As the House met only for general debate, there was, of course, no question up for action, and the matter was then dropped.

No further action has been taken in the Senate upon the subject, and as it is possible the session will terminate at the end of May, the whole matter will probably be given the go by in both Houses.

I omitted to notice in my last week's letter a bill to incorporate the Southern International Telegraph Company, introduced in the House on the 22d inst. by Mr. Banks, and, on his motion, referred to the Committee on Foreign Affairs. The incorporators named are Henry D. Cooke, Z. Douglas Lansing, John C. Fremont, A. C. Wickham, Dan. A. Pardee, Stephen Hoyt, Hiram D. Faulkner, J. C. Tucker, S. W. Morton, A. A. Trimble, O. H. Bynum, James Y. Ashton and E. F. Browning.

The object of this corporation is the laying of ocean telegraph cables across the Atlantic Ocean, via the Bermuda and Scilly Islands, to Land's End, England; and also across the Pacific Ocean, and to connect the same by land lines of telegraph across the States and Territories of the United States, with a capital of \$15,000,000, in shares of \$100 each. The first Atlantic cable is required to be laid in two years, and the first Pacific cable in three years from the passage of the Act. The price for the transmission of cable messages across the Atlantic Ocean is limited to three dollars in

gold for ten words, and five dollars in gold for twenty words; and five dollars for ten or eight dollars for twenty words, in coin, for messages across the Pacific Ocean.

It will be seen that if this bill passes it will do what Congress has heretofore refused to do—that is, give a national act of incorporation to a company which will authorize them not only to lay cables but to construct a complete system of domestic telegraphs.

In the House, on the 24th inst., Mr. Strong presented the memorial of Julia H. Wilson, praying the substitution of the Wilson Electric Gas Lighter for the one now in use over the Hall of the House of Representatives and in the Rotunda and dome of the Capitol. Referred to the Committee on Public Buildings and Grounds.

A number of officials of the Western Union Telegraph Company were about the Capital last week, including Eckert and Bates, the glass insulator men, whose united efforts at improving the insulation of the wires on the Eastern Division have made them exceedingly dear to the hearts of the operators who are condemned to work, or attempt to work them in damp weather. Their visit was short, and is not supposed to have had any particular significance, so far as telegraphic legislation is concerned.

CAPITOL.

Confidence Must be Deserved.—Compulsion Impossible.

TO THE EDITOR OF THE TELEGRAPHER.

GENTLEMEN who expect to sow compulsion and reap success are still quite plentiful. Do any of you think the Western Union Telegraph Company can be compelled to do what you ought to do for yourselves? We must first win the esteem and confidence of the proprietors before we can look for material encouragement. There is but one way to win the confidence of a good man, and it is by first confiding in him. If you have ever tried any other way to win it you have failed.

I see no indications of such a feeling as ought to come out. In fact, the men whose hearts are right upon this subject, are thinking. Congress has its Hot-spurs (so have we), who jump up instantly there is a well digested resolution offered. They sit down as suddenly, to find they had barked at something quite incomprehensible to their little brains, after they have had a better view of it. Usually the first to speak are the last to act. Don't be mortified, gentlemen, I have been truthfully so criticized many a time.

Our proposition must be this or nothing—that they from whom we want encouragement are men like ourselves, open to the same influence irrevocably set against dictation, compulsion, or independent union among ourselves while in their employ. These would be, under the same circumstances, precisely our sentiments. We do not say our motives are bad, therefore we cannot impute to them a lack of justice and goodness of heart. We would make better progress should we concede that they are a little better than ourselves, which is perhaps the truth.

Be not alarmed if my words seem to have no weight. I will certainly fail if I am on the wrong track. Be patient—think!

In conclusion, I would say my employers have treated me better than I deserve. The number who can say the same is not small. Be not afraid you will confide too much—the more freely you come forward the more noble will be the return. Begin to-day; do your work with a nerve and in a manner which will entitle you to the encouragement you may not get, but which you can in no other way deserve.

Telegraphic Notes.—The Invention of the Telegraph.

WASHINGTON, D. C., Jan. 31.

TO THE EDITOR OF THE TELEGRAPHER.

CONSIDERABLE curiosity was excited in telegraphic circles here by the appearance, the middle of last week, of a delegation of Western Union officials. The party comprised General Superintendent Eckert, District Superintendent Bates, Managers Brown and Merrihew, of New York and Philadelphia, and Chief Constructor Doren. They appeared to be on a visit of inspection and sight seeing, and spent Thursday and Friday visiting the Capitol and other public buildings. They departed as they came, and as there has been no great natural or telegraphic convulsion here since, it is not supposed that their visit had any very special significance.

The Automatic Telegraph Company have not opened for business here yet, but the new manager in place of Mr. W. C. Barney, who seems to have a considerable disgust towards the management of the company, says they will soon. We are all anxiously waiting the development of the system which it is claimed is to supersede existing telegraphic systems.

The Southern and Atlantic Company have commenced putting up a second wire from Gordonsville to Washington.

The lady operator at the Franklin office, in the Imperial Hotel, has retired, and Mr. Cudlip has taken charge of that office.

Everything seems to be working smoothly at the Western Union office under the new management. The appointments announced in a previous letter are generally popular and satisfactory to the employes.

The annual meeting of the Board of Regents of the Smithsonian Institute was held on Thursday evening of

last week. A communication from Mr. Henry O'Reilly, with various documents relative to the invention and early history of the telegraph, was received and placed in the archives. Professor Henry was authorized to make arrangements for communicating with the leading astronomers of Europe, by Atlantic cable, discoveries of planets, comets, etc., so that they may be simultaneously observed at the different observatories—whereby the cause of science would be greatly promoted.

Quite a discussion of the question as to "Who discovered telegraphing?" has sprung up in the city papers, consequent upon Mr. O'Reilly's communication. That honor is claimed for Professor Henry by Mr. O'Reilly and others. The subject would require more space than you could probably spare to enter into it at any length this week; but, if time and opportunity permit, I may refer to it again hereafter.

WASHINGTON.

Presentation to a Telegraph Superintendent.

TO THE EDITOR OF THE TELEGRAPHER.

ONE of those pleasant affairs that we love to chronicle, came off at Reading, Pa., on Saturday, January 27th, at the residence of Mr. C. T. Sellers, the Superintendent of the Philadelphia, Reading and Pottsville Telegraph Company. It was the presentation of a set of very handsome silver service to Mr. Sellers by the operators of the company, as a token of their respect for him as a man and an officer. During the absence of Mr. Sellers the following committee visited the residence of Mr. Sellers and awaited his return home: J. J. Griffith, Philadelphia; J. A. Roller, Pottstown; A. J. Darlington, C. A. Hosnan, Frank Sheaffer, F. H. Gartlan and C. F. Clase, Reading; C. M. Lewis, Jr., L. M. Hawley and G. L. Brennan, Pottsville.

Pending the arrival of Mr. Sellers, C. L. Brennan amused the boys with some stories told in his choicest manner, with a rich Dublin accent. In the midst of a laugh, caused by his last and best, Mr. Sellers arrived at the door, escorting some ladies from the depot, and appeared to be considerably taken aback at the presence of the employees sitting around the room. He inquired if they were on a strike, to which they all answered, "Yes." After some little badinage had been indulged in Mr. Sellers was invited into the next room. The operators forming a circle around him, Mr. Griffith then stepped forward and addressed him as follows:

"Mr. Sellers—Allow me, on behalf of the employees of the Philadelphia, Reading and Pottsville Telegraph Company, to present you this silver service, which we hope you will accept as a slight token of their regard and esteem."

Mr. Sellers was visibly affected, and in a voice slightly shaken with emotion, replied as follows:

"My Friends—You have taken me completely by surprise—so much so that I can hardly express myself. I can only say that I accept of this beautiful present as a token of your esteem and friendship—not that it is deserved or merited. I hope that in the future our social and business relations may remain unchanged. I appreciate your kindness very much, and thank you one and all."

After spending a pleasant hour in a social way the party retired, leaving Mr. Sellers to recover from his surprise.

The testimonial is one of elegance; one that, in a pecuniary point of view, as well as of taste in style and design, would do honor to any gentleman's sideboard, and consists of the following articles: Salver, coffee urn, teapot, water pot, sugar bowl, cream jug, spoon holder, sloop bowl, caster, salt cellars, one dozen spoons, and call bell. These were enclosed in a handsome walnut case, lined with chamois skin. The caster and urn, and a silver plate on the lid of the case, have the following inscription, neatly engraved:

"Presented to
C. T. SELLERS,
January, 1872,
by the
Employees of the
P., R. & P. T. Co." G

Answer to Correspondent.

H. M.—If you use No. 14 copper wire a distance of 75 or 80 feet will make no perceptible difference in the working of a Combination Local.

Personals.

Mr. O. N. DORRANCE, Superintendent of Telegraph of the Kansas Pacific Railway, has been appointed Superintendent of the Smoky Hill Division of that road. This is an appointment well bestowed, for besides being an accomplished telegrapher he is equally accomplished as a railroad man and a gentleman.

Mr. A. M. MACKAY, the efficient and popular Superintendent of the New York, Newfoundland and London Telegraph Company, was in this city during the past week on his annual visit. He, as well as the lines under his charge, is in a flourishing condition. He deserves his prosperity and popularity.

Mr. HENRY WARREN, late of New Orleans, has accepted the position of Manager of the Western Union office at Lawrence, Kansas.

Mr. GEORGE W. HAYWOOD has been appointed manager of the Atlantic and Pacific office, Russell House, Detroit.

Mr. T. M. COLLINS has charge of the Western Union office at Harrisburg, Texas.

Mr. AUGUST SCHMITZ has charge of the Western Union office at New Braunfels, Texas.

Mr. CHAS. CHASE, formerly of Houston, Texas, has been appointed manager of the Western Union office at Brownsville, Texas.

Mr. J. M. MORRISON, formerly of Cincinnati, has accepted a position in the Western Union office at Galveston, Texas, *vice* W. J. Landy, resigned.

Mr. W. J. LANDY has resigned his position in the Western Union office at Galveston, Texas, and accepted a position in the New Orleans office of the same company.

Mr. T. MEYERHOEFER, of Springfield, Missouri, desires to learn the present address of Mr. L. BOBO, formerly on the Missouri Pacific R. R., and of Mr. JAMES FAY, formerly at Brocton, N. Y.

The Telegraph.

By Cable.

THE MEXICO-CUBA CABLE.

HAVANA, Jan. 30.—The American survey steamer Bibb sailed yesterday, to make the soundings between Yucatan and Cape Atoche for the proposed Mexico-Cuba Cable.

Statistics of the Postal Telegraph in Great Britain.

WHILE in the financial year ended the 31st of March, 1871, the messages amounted to 9,850,177, those for the current financial year, ending the 31st of March next (estimating the remaining quarter according to the average of the preceding quarters), will reach 12,410,726—an increase of 26 per cent. The total number of offices open on the 5th of February, 1870, when the business was taken over by the State, was 2,932, and it is now 5,093. These 5,093 consisted of 3,291 postal offices and 1,807 railway telegraph offices. The latter have slightly decreased since the change, the former number having been 1,874. The great augmentation has been in the postal offices, which have risen from 1,058 to 3,291—those in the London district having increased from 177 to 361; in the rest of England and Wales from 605 to 1,979; in Scotland from 155 to 391, and in Ireland from 122 to 560.

Telegraph Extension in Florida.

THE International Ocean Telegraph Company have just completed a branch of their line in Florida, from Gainesville to Pilatka. This line was built under the direction and supervision of Col. W. H. Heiss, the able and popular General Superintendent of the Company. It is over forty miles in length, and was constructed mainly for the accommodation of the invalids and others who resort to Pilatka for the benefit of a warm climate during the winter season. The line opened for business January 25, and Mr. C. V. Heiss has been appointed manager.

A New Telegraph Office.

THE Philadelphia, Pottsville and Reading Telegraph Company have opened an additional office in Schnylkill Haven, Pa., with Miss Kate B. Hannum as operator. The new office is next door to the Western Union office in that place, and will inaugurate an even more active competition for business between the two companies than heretofore. Under Miss Hannum's management the interests of the patrons of the line will be well attended to. This company is enterprising and accommodating, and deserves the success which has attended it.

Foreign Telegraphic Notes.

Mr. CRACKNELL, the Government Superintendent of Queensland Telegraphs, has been on a tour of inspection in the North. He followed the course of the line from Cardwell to the mouth of the Norman, and found it to be well and substantially constructed, as far as it had gone. The length of the wire between Brisbane and Cardwell is 1,032 miles, and, by adding the 393 miles from Cardwell to Normanton, there is a total distance of 1,425 miles between Brisbane and the Gulf. This line will be about 600 miles shorter than the South Australian Trans-Continental line. The cable shipped from England for Port Darwin will hardly arrive too soon, and in two months the whole of the colonies will be within 1,850 miles of telegraphic communication with Great Britain.

The question of telegraphic communication between England and America has called out two distinct propositions. The first, which is being laid before the various Chambers of Commerce in Great Britain, is to effect the acquisition of the existing cables by the English and American Governments, and to secure for those Governments a monopoly of all future lines. The other project is simply the immediate construction of a new cable, to compete with the existing companies. The promoters of both schemes avow a common object, viz., the reduction of the rates charged for messages, and the consequent advantage to the general public.

Telegraphic communication was opened to Upper Burkhall, in British India, December 6th, 1871, and would be completed in a day or two to Demogiree.

The traffic receipts of the Great Northern Telegraph Company for the month of December amounted to 79,483 francs (£3,179) for 29,269 messages; and for the corresponding month in 1870, to 77,822 francs (£3,113) for 28,160 messages. The total receipts for the year 1871 amounted to 1,163,668 francs (£46,547) for 421,666 messages; and, for the year 1870, to 1,115,624 francs (£44,625) for 402,149 messages, showing an increase in the receipts of £1,922.

The Great Northern Telegraph Company have established a uniform rate for the transmission of messages to Hong Kong, Shanghai and Nagasaki—that charged from the provinces being 1s. more than from London—the messages to be marked *via* Russia. If the messages are for other places in China or Japan they will be forwarded free of postage if the word "Post" be prefixed to the name of the station.

The Sultan has ratified the Russo-Turkish convention for sinking a submarine telegraph cable in the Black Sea, from Odessa to Constantinople.

The International Telegraph Congress at Rome have decided that their next meeting shall be held at St. Petersburg, in the year 1875. Of the twenty delegates who voted ten were in favor of London, and ten proposed the Russian metropolis. As there was no one who had the casting vote, lots were drawn, and the above was the result.

A general meeting of the shareholders of the Great Northern and China and Japan Extension Companies has been called, in order to unite the two associations and transform them into one new company, with a capital of £1,500,000. At this general meeting there will be proposed a new telegraphic line between England and Denmark, and the construction of a telegraphic station at Amoy.

At a meeting of the Board of the Anglo-American Telegraph Company (Limited) it was resolved to recommend the declaration of a dividend of £3 3s. 4d. per cent., making, with the three interim dividends of 2 per cent. each already paid, £9 3s. 4d. for the eleven months ending the 31st December, 1871, being at the rate of 10 per cent. per annum, free of income tax.

The total number of messages forwarded from postal telegraph stations in the United Kingdom during the week ended January 6th was 217,518—an increase of 61,400 as compared with the corresponding week of last year.

The South German Telegraph Company, with a capital of 100,000 thalers, has been established since the 10th of December, 1871. They charge, *via* Turkey, for twenty words to Beloochistan, about £3 10s.; to the East Indies, west of Chittagong, about £4; to the East Indies, east of Chittagong, 4s. more.

Telegraphic Brevities.

THE new wire of the Western Union Telegraph Company has been completed to Brownsville, Texas. Press news is now sent to Brownsville from New Orleans through a repeater at Houston.

A new telegraph line has been built from Hearne, Texas, to Jewett, Texas, on the line of the International Railroad.

The telegraph department of the united railroads of New Jersey has been moved from Bordentown to Trenton. The movements of all the trains are now regulated from the Trenton office.

The Great Western Telegraph Co. have extended their line to Lawrence, Kansas, and opened an office for business at that place, with Mr. J. A. Hard, late manager of the Western Union office, as manager. It is understood that this company will extend their line still further West in the spring.

The Missouri Pacific Railroad Company are extending the telegraph along the line of their recently opened branch railroad from Pleasant Hill, Mo., to Lawrence, Kansas.

A Telegraphic Resume.

THE *Mechanics' Magazine*, of London, in its summary for the year 1871, has the following in reference to telegraph matters:

"Although there is no Atlantic cable success to record in the events of the past year, yet its every month has been marked by a steady and rapid extension of facilities for telegraphic intercommunication in foreign parts, radiating, almost naturally, from England as a centre. The Asiatic and Australian lines uniting, or to unite China, Japan, and other South Sea colonies with the Indo-European systems already in operation, have been prosecuted with uniform activity and success. In the West India islands, and along the Pacific coast of South America, extensions have actively progressed, in both cases by land lines and submarine cables. Within the limits of Great Britain itself there is nothing more remarkable than the development of the postal telegraph system since its acquisition by Government. The adoption and extension of the pneumatic despatch tube system in London, and some other large towns, have increased existing, and supplemented them with new facilities for the local transmission of messages. Unfortunately all has not been *couleur-de-rose*, and there are two features that present themselves promi-

nently for serious consideration. The strike of the telegraph clerks, though abortive, affords an unmistakable indication of latent injustice, which it is impossible to deny and would be imprudent to ignore. This, however, affects only a small class; but the community at large is dammed by the unwarrantable abuse of confidence manifested in the retention and mutilation or correction of messages, under the idea, rightly or wrongly formed, that they were inaccurate. It is painful to speak in terms of censure of a public servant who has approved himself so competent and reliable as Mr. Scudamore, and we have reason to think that if the circumstances were repeated, he would think more than twice and then refrain from acting as he did. But we cannot too strongly animadvert upon the violation of confidence involved in such a procedure; and for the interest of the public, and the department alike, it is essential that the principle be recognized, once and for all, that telegrams, like letters, should be inviolable by officials; otherwise the business of the country could not possibly be conducted without resort to such means of protection as simple systems of cipher would afford—a restriction that would greatly hamper its transactions.

New Patents.

For the Week ending January 23, 1872, and each bearing that date.

No. 122,952.—IRON TELEGRAPH POLE. Richard D. McDonald, Jersey City, N. J., and Edward M. Crandall, Marshalltown, Iowa, assignors to Richard D. McDonald.

1. The removable winged socket B, combined with the pointed and shouldered lower section or base of a sectional telegraph pole, substantially as herein shown and described.
2. The telegraph pole formed of tubular iron sections, fitted together by means of slip joints and recesses and lugs A and C, as herein shown and described.

No. 122,951.—TELEGRAPH INSULATOR. Chester H. Pond, Cleveland, Ohio.

The herein described telegraph insulator, consisting of the head A, cap C, stem B, collar E, chambers F J', with or without centre pin or rod F, insulating coating G, and shield G, substantially in the manner as and for the purpose specified.

No. 122,952.—INSULATING COMPOUND FOR TELEGRAPHS, &c. Chester H. Pond, Cleveland, Ohio.

The insulating compound, consisting of the ingredients and in about the proportions substantially as herein set forth.

No. 123,005.—TELEGRAPH APPARATUS. Thomas A. Edison, Newark, N. J., assignor to The Gold and Stock Telegraph Company, New York City.

1. A pulsator driven by friction, and acting to make and break an electrical circuit in which are the magnets, operating two or more type wheels in unison, substantially as set forth.
2. The pulsator, constructed substantially as set forth, in combination with a magnetic motor and the type wheel and its magnet, substantially as set forth.
3. The pulsator *g* and its arm 16, in combination with the switch *l* and the metallic connections, substantially as set forth, for stopping the pulsator at the receiving station and completing the electric connections to the type wheel magnets.
4. The type wheel shaft *b* and type wheel *c*, in combination with the sleeve *e* and its incline, for giving an end movement to the sleeve when its rotation is arrested, substantially as set forth.
5. The arms 22 and 23 and sleeve *e*, in combination with the keys *d* and the pulsator stop 16 and pulsator *g*, substantially as and for the purposes set forth.
6. The feeding roller segments *s* and pawls 32, arranged substantially as shown, and operated by the printing lever *t*, acting upon the arms 33, substantially as shown.
7. The printing lever magnet in an electric circuit that is closed by the movement of the lever that operates the type wheel, substantially as set forth, so that the printing magnet is brought into action by a pause in the rotation of the type wheel.
8. The lever or switch *v*, in combination with the impression magnet and printing lever, substantially as set forth, for breaking the circuit automatically to the printing magnet.
9. The printing lever *t* and magnet, in combination with the type wheel lever *n*, arms *z* and 39, and switch lever *v*, substantially as and for the purposes set forth.
10. A type wheel, moved with a step by step movement, an electro-magnet for the same, and a pulsator, in combination with a secondary circuit to the printing magnet operated automatically, substantially as set forth.
11. A series of printing telegraph instruments arranged in one main electrical circuit, and operated by the pulsator of any one machine in that circuit acting as a transmitter, and all the machines acting in harmony as receiving machines, the pulsation in each receiving machine being stopped or thrown out of action, substantially as set forth.
12. A printing telegraph instrument, containing a pulsator, type wheel, type wheel magnet, a switch and letter keys, substantially as specified, so as to act as a receiving or transmitting machine by the movement of the switch, as specified.

No. 123,006.—PRINTING TELEGRAPH. Thomas A. Edison, Newark, N. J., assignor to The Gold and Stock Telegraph Company, New York City.

1. Two type wheels fitted to slide endwise of their shaft, in combination with mechanism, substantially as specified, to give such end movement to the said type wheels, and a shield to prevent an impression from more than one of the type wheels, substantially as set forth.
2. The lever *w*, connected with the type wheel shaft and type wheels, in combination with the fingers that are moved by the impression lever, substantially as set forth.
3. The stationary notched ring *m*, in combination with the type wheels *c* and *d*, fitted to slide endwise of the shaft *a*, substantially as set forth.

EXTENSION.

No. 19,042.—IMPROVEMENT IN ELECTRO-MAGNETIC SPEED GOVERNOR. Granted to George M. Phelps, January 5, 1866.

Causing a centrifugal or other suitable speed governor to regulate the motion of the machine or instrument with or by which such governor is driven, by making the governor close and break a current of electricity which operates an electro-magnetic contrivance, arranged to work whatever device or mechanism is employed to change the speed of the machine or instrument, as herein described.

Died.

FREEMAN.—In the twenty-fourth year of her age, at De Lamas, Missouri, at thirty minutes past nine o'clock, A. M., Friday, Jan. 19th, after an illness of three weeks, EMMA ROSALIE, beloved wife of WILL. T. FREEMAN, and daughter of the late Dr. Bourgeois, of Point Coupée, La. New Orleans papers please copy.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.

FRANK L. POPE, Associate Editor.

SATURDAY, FEBRUARY 3, 1872.

Crowded Columns.

THE pressure upon our advertising columns compels us to omit this week our premium advertisement. It is still in force, however, and will probably appear again next week.

We are also compelled to postpone editorials, communications and other interesting matter, intended for publication this week.

Is the American System of Train Despatching an Unsafe One?

A CONTRIBUTOR to the columns of our contemporary, the *Railroad Gazette*, who has been writing on the management and discipline of American railroads, over the signature of "A Hindoo," and who is by no means destitute of ability, in an article in the current number of that journal, makes some very severe criticisms on the system of controlling the movement of trains by telegraphic orders, which is in use on the leading roads in this country. Referring to the recent Convention of Western railroad managers at St. Louis, he says:

"I would suggest, as one of the first subjects that should receive attention at the hands of the general managers of the West, the train despatching system. Is the plan now generally obtaining on American roads, of controlling the movements of trains from the despatcher's office, independent of the station masters, a method sufficiently perfect and reliable to insure the maximum amount of safety and regularity of train service that is possible? My experience of this matter leads me to think that if every manager came to the meeting with a thorough knowledge of the practical effects of the system, and with the moral courage to 'own up,' a decisive vote of want of confidence would result. Admitting that the arrangement is theoretically good, that it is *prima facie* the cheapest that can be devised, and that it is the least laborious, I affirm that in practice it is unsafe, unreliable; that it is not in the end the cheapest, and that it does not within itself provide any check. I also unhesitatingly affirm that few superintendents know the number of mistakes that are made, the number of hair-breadth escapes, the delays to trains through inattention or want of judgment. It is only when the error has gone on to a result which cannot be concealed that the superintendent hears of it. The position is hardly debatable that a system providing perfect safety in the working of trains cannot be too expensive." The sums paid in damages, and the value of property lost in wrecks, under an inefficient arrangement, would cover the cost of a very elaborate system which prevents such accidents, leaving aside the question whether too great a price can be paid to save one limb, much more a life."

While we are tolerably familiar with the telegraphic despatching system, as used on the principal Western railroads, and whose safety and utility, under proper regulations, we have never before known to be questioned, yet, having personally had no practical experience in this line, we print the above in order that such of our readers as are qualified to speak on the subject may have an opportunity to give their experience.

It does not seem possible to us that if the system is really "unsafe and unreliable," as the writer in the *Gazette* affirms, that roads like the Michigan Central, Chicago, Burlington and Quincy, Chicago and Northwestern, and many others, could be worked with a heavy traffic on a single track for a long series of years, without occasional serious accidents, directly chargeable to the alleged defects in the system. Yet we do not think that such has been the case, although the above article conveys the impression that hair-breadth escapes, mistakes, and delays to trains are of frequent and constant occurrence.

We hope to hear from our railroad friends on this subject. If the despatching system is defective, let its defects be pointed out and remedies suggested and applied; while, if the assertion of the *Gazette* writer are

unfounded, they should not be allowed to pass unchallenged. The subject is one of the utmost importance and interest, and a discussion of it cannot fail, in one way and another, to accomplish much good.

Mr. Scudamore's Violations of the Postal Telegraph Law Endorsed.

THE law under which the telegraphs are administered in England makes it a penal offence for any official of the Government to delay or suppress telegraph messages. This provision, it is charged, and not denied, Mr. SCUDAMORE violated in several instances during the recent striking of the telegraph employés. Instead of seeking to administer the law and protect telegraph patrons, his superiors have rewarded his alleged criminality by promotion!

G. W. S., the able London correspondent of the *New York Tribune*, thus speaks of this new outrage upon public rights of the British postal authorities:

"Yesterday's papers announce that Mr. Scudamore has been appointed Director General of Telegraphs. It is not stated whether this is meant to indicate that the Government approves the opening, and reading, and suppressing of private telegrams. But people who think the establishment of censorship over telegraphic communication impossible, may as well look the facts in the face. Mr. Scudamore, as Second Secretary of the Post-office, claimed and exercised the right to stop telegrams which seemed to him detrimental to the public service. He did it in at least three cases which have become public. It has been alleged, and not denied, that he has done it in many other cases. At and about the time when the most flagrant of these cases occurred, Mr. Scudamore was writing frequent letters to the newspapers on matters relating to his administration of the telegraphs, explaining and justifying other acts, or denying other charges. But neither then nor since, though often challenged, has he denied, or explained, or regretted, or in any way referred to his tampering with private despatches; nor has the Postmaster-General, or any officer of Government, disavowed the act of this subordinate. The offence being thus admitted, the offender is now rewarded with apparently a new office, certainly a new title, and probably an increase of salary. He is not only screened—he is sustained; and not only sustained, but promoted. So far as the public knows, or has any means of knowing, a censorship over the telegraphs actually exists, and it is for Mr. Scudamore to say what we may be permitted to send over the wires. Would you be any more secure in America with the telegraphs in Government hands? Oh, but such things will be forbidden by law! No doubt, and so they are here, and Mr. Scudamore is believed to have rendered himself liable to a criminal prosecution and a year's imprisonment, but who is going to prosecute? and, with the Government to back him, what does he care if anybody does; and what chance would there be of his conviction or punishment?"

We commend the above to the earnest consideration of those in this country who are or have been favorable to a Government telegraph monopoly here—especially to such, if any there yet be, among the telegraphic fraternity.

Protection Against Railway Casualties.

Gov. WASHBURN, of Massachusetts, in his annual message to the Legislature of that State, says:

"The report of the Railroad Commissioners of the State will be laid before you in the course of a few weeks. The gentlemen of the Commission seem to me to be rendering useful service in an important work, and I ask your serious attention to the matters they have discussed with ability and foresight. The memory of a painful casualty near Boston, since the adjournment of the last General Court, will give force to the suggestions in the matter of additional precautions against railway accidents."

Complete protection can only be secured by the adoption of a simple and reliable system of electric signals, and of movement of trains by telegraph. That ultimately, and at no distant day, every railroad must adopt such a system, and that when adopted it will prevent a large proportion of the accidents which now result in so great a sacrifice of life and property annually, there can be no doubt.

Resignation of Patent Examiner Hayes.

MR. A. L. HAYES has resigned the position of Examiner in the United States Patent Office, which, for several years past, he has so ably and satisfactorily filled. He was principally occupied in the examination of applications for patents on electrical and telegraphic inventions, and by the intelligence, comprehensiveness and fairness of his decisions upon the numerous and perplexing questions which necessarily arise, under the conflicting interests and inventions in-

involved, gave very general satisfaction. It will not be easy to supply his place, and for the sake of inventors we regret his retirement.

For the present Mr. HAYES may be found at the office of his brother, WILLIAM A. HAYES, JR., Esq., No. 17 Pemberton square, Boston, Mass. He will attend to all descriptions of patent business. His long connection with the patent office, and his familiarity with all the details of the service, will enable him to conduct any business of that description which may be entrusted to him in such a manner as shall ensure the most expeditious and best possible results. He has the best wishes of THE TELEGRAPHER for his success in his "new departure" in the patent business.

The Automatic Telegraph Company.

WE publish on our first page an article which purports to show the deficiencies and defects of the Automatic Telegraph Company. We do this in pursuance of our policy of admitting to our columns the discussion of all matters of telegraphic interest. We do not desire to be understood as endorsing or condemning either Mr. BARNEY or the Automatic Company, but believing automatic telegraphy has now reached the point where its discussion is a matter of public and general interest, we shall be pleased to give as much space as due attention to other matters will permit to its discussion.

Proposed Enlargement of L. G. Tillotson & Co.'s Manufactory.

WE have frequently alluded to the wonderful development of the business of manufacturing telegraphic and electrical apparatus during the last few years. This development and increase seems to be unabated, and at the present time the shops of the manufacturers of such apparatus, or at least such of them as consult their own interests by advertising in THE TELEGRAPHER, are more than ever crowded with work. The leading position of the firm of L. G. TILLOTSON & Co. in this business is well known to our readers, and we are pleased to be able to state that they have decided to double their facilities with the coming spring. The entire upper floor of the CORNELL building, in Centre street, has been leased by this firm, and will be fitted up with new and improved machinery, and an additional force of expert workmen employed, in the hope that by this means adequate facilities may be obtained for the constantly accumulating orders pressing upon them. For some time past TILLOTSON's shop has been run nights until ten o'clock, but yet the new orders exceed those which they are thus enabled to complete.

The new shop will be 70 by 75 feet, and when fitted up and in operation will, without doubt, be the most complete telegraph works in the country.

MR. TILLOTSON himself leaves for Europe in about two weeks, and will purchase any new or improved machinery which can be obtained abroad for the better equipment of the new factory.

Energy, enterprise, capital, and personal popularity are elements which may be relied upon to insure success, as the experience of TILLOTSON has abundantly demonstrated.

The Fire Alarm Telegraph in Taunton, Mass.

MESSRS. GAMEWELL & Co. have completed the Fire Alarm Telegraph system for Taunton, Mass., and it was inspected and turned over to the municipal authorities of that city on Wednesday last.

The performance of the telegraph was perfectly successful and satisfactory, and the inspection and exhibition was attended by delegates from several other cities, who are now negotiating with Gamewell & Co. for the construction of the same system, and who were much gratified with its success.

Reward for Electrical Improvements.

By a decree dated April 18, 1866, of the Minister of Public Instruction in France, a prize of 50,000 francs (\$10,000) was offered for the most useful application of the voltaic pile, the period for competition to expire in April, 1871. From a report of the minutes presented by the President of the Republic it appears that candidates are few in number, and that, in the opinion of the savans to whom the memoirs were submitted, none is of sufficient merit to have earned the prize. By a decree of the 29th of November the competition is now extended for another period of five years, to terminate on November 29, 1876.

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Fall River, Mass.,
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Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
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Mobile, Ala.,
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the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution therefor of the

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FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

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is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

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RELIABILITY and

ECONOMY

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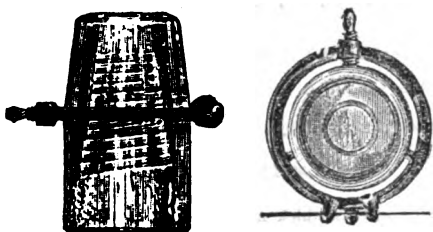
but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

CHESTER'S PATENT INSULATOR.



The undersigned solicit examination of some of the reasons which have induced them to recommend to their patrons and friends the Insulator exhibited above as the best and cheapest in use.

Experience has shown that pure glass is, under certain conditions, nearly a perfect insulating medium, and could these conditions be uniformly maintained for all purposes of practical telegraphing, we might rest there, satisfied that so long as the conducting wire be separated from its various points of support by a glass shield, of whatever size or shape, that there could be no escape of current from the conducting wire.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The conducting media, which, to a greater or less degree, are inseparable from ordinary insulators of glass, hard rubber, earthenware or porcelain, are continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire.

It is also evident that the amount of conductivity over each and every insulator, arising from these causes, is decreased by the longer distance the current must traverse these imperfect conductors between the wire and its point of support, and is increased by the increased diameter or breadth of the Insulator, as affording a greater number of these lines of conduction. When glass only is regarded, another objection also exists to great thickness, in the fact that the unequal cooling of the mass produces innumerable microscopic surface fissures, which at certain temperatures absorb moisture from capillary attraction.

Glass of ordinary surface, such as is used for ordinary Insulators, hard rubber, porcelain and earthenware, have in different degrees the capacity for receiving and retaining surface moisture in continuous lines, either from direct showers or by the condensation of moisture upon even an apparently dry day, when the thermometrical changes are such that the temperature of the Insulator is less than that of the atmosphere.

The original surface fractures alluded to in ordinary Insulators of glass are much increased, and others are produced by the necessary strains and shocks to which they are exposed during the erection of the wire and its subsequent swaying. These are the more vicious, as they are not apparent from any ordinary point of observation.

Hence, the requisites of a perfect Insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as long as possible, while its width should be as small as possible.

In the construction of Insulators great ingenuity has been exercised to give strength, and yet elongate and narrow the lines of superficial continuity. The support of the wire has been drawn out to as great a length as is consistent with strength, and the glass has been made narrow, and Insulators thus made have proved very serviceable. It is obvious that there is a limit to this idea under old forms of construction.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal. It requires no labored description to bring out the self-evident fact. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH. The removal or substitution of an Insulator, without disturbing the conducting wire, is an incidental advantage of this construction.

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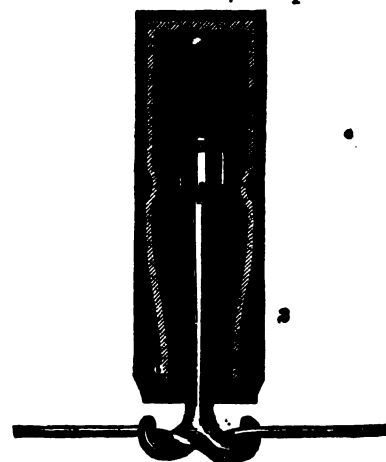
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The Telegrapher

A Journal of Electrical Progress.

Vol. VIII.—No. 25.

New York, Saturday, February 10, 1872.

Whole No. 291

The Invention of the Electro-Magnetic Telegraph.

AT the recent meeting of the Regents of the Smithsonian Institution, at Washington, D. C., Mr. Henry O'Reilly communicated a copy of a correspondence "Illustrative of the Development of Electro-magnetic Discovery, as Connected with Telegraphic History." The following letter of Mr. F. O. J. Smith, whose prominent connection with Professor Morse in the early days of the telegraph in this country is well known, makes some important and interesting statements on this subject, and we publish it as a part of telegraphic history, and by request. Mr. Smith's letter is in response to a letter requesting a contribution from him towards the national monument to Professor Morse, proposed to be erected at Washington:

FOREST HOME, NEAR PORTLAND,
December 11, 1871.

Henry J. Rogers, Esq., Cor. Sec., &c.

Dear Sir: In my absence your letter of the 11th ult. was received here, with the printed circular of the National Monumental Society, in reply to which I feel constrained to say if that highly laudable association resolves "to erect at the national capital of the United States a memorial monument," to symbolize in statuary of colossal proportions the "history of the electro-magnetic telegraph," before that history has been authentically written, it is my conviction that the statue most worthy to stand upon the pedestal of such monument would be that of the man of true science, who explored the laws of nature ahead of all other men, and was "the first to wrest electro-magnetism from nature's embrace and make it a missionary to the cause of human progress," and that man is Professor Joseph Henry, of the Smithsonian Institution.

Professor Morse and his early coadjutors would more appropriately occupy, in groups of high relief, the sides of that pedestal, symbolizing by their established merits and coöperative works the grandeur of the researches and resulting discoveries of their leader and chief, who was the first to announce and to demonstrate to a despairing world, by actual mechanical agencies, the practicability of an electro-magnetic telegraph through any distances.

All telegraphic inventors, from Steinheil, of Germany, down through Cooke, and Wheatstone, and Bain, of England, and Morse and House, of our own country, are but disciples to the science of Henry; and the world is indebted to the latter alone, and to our country, for the first and earliest revival of incentives to mechanical genius directed to telegraphic results of both the electric and magnetic orders, subsequently to the announcement of Barlow's experiments, which were accepted by the scientific world as demonstrating the utter impracticability of such telegraphs.

But Henry pushed on and melted away his toiling hours in more than four thousand experiments, piercing the mysteries of the subtle forces of galvanic electricity and electro-magnetism, and at length won the victory beyond dispute. And to Joseph Henry our country, and beyond it the "rest of mankind" owe, first, last and forever, the highest and foremost distinction in their monumental symbols of telegraphic history.

To place the statue of any man above that of Professor Henry in symbolizing the history of the electro-magnetic telegraph, would be to reverse the order of nature as much as if the apex of a monumental shaft were inverted to rest on its pedestal. It would be, in fact, more symbolical of the misdirected judgment of its promoters, than of enduring honor to their subject. It would be to perpetuate in granite and bronze a blunder of history.

Professor Morse cannot justly claim, nor will authentic history sustain such preëminence for himself. In other days he did not pretend to it. In his published letter to Dr. C. T. Jackson, dated December 7, 1837, he says: "My invention on board the Sully is mechanical and mathematical. It had no more to do with *chemical science* than with geology or anatomy. The single scientific fact ascertained by Franklin, that electricity can be made to travel on a conductor instantaneously, any distance, was all that I needed to know, aside from mathematical and mechanical science, in order to plan all I invented on board the ship, as any one will

be able to see from a moment's inspection of my machinery, as then planned."

In the same letter he repudiated electro-magnetism as having anything to do with what he had there invented, for, after enumerating the several parts of his then plan of a telegraph, he triumphantly asks, "Now, what has chemistry or electro-magnetism to do with these?"

Future historians will write many like evidences, from Professor Morse himself, of what his original pretensions to scientific research and to original invention were in the telegraph. One more, however, will suffice now.

In the case of Morse and others *vs.* O'Reilly and others, in the United States Court in Kentucky, Mr. Morse testified, August 31, 1848, as follows to his own want of scientific knowledge and research: "His invention was complete and in action before he knew that the two words 'electro-telegraph' were ever compounded but by himself. In regard to Professor Henry's experiments to show the practicability of propelling electricity effectively to a great distance, in opposition to the opinion of Barlow that it could not be done, this affiant freely accords to Professor Henry the honor of that discovery. It was *proving a fact* which affiant took for granted was true, and consequently founded his invention on its believed truth. At the time of his invention, however, he was ignorant both of the fact and the discoverer of the fact."

Professor Morse assumed a fact to exist which existed without his knowledge, and hence he knew not how to avail himself of it more than Barlow did in 1825, when he had planned his mechanism. Barlow failed only from assuming this same fact, but, like Morse, without knowing how to accomplish it. Professor Morse reached the same point in the winter of 1836 as Barlow did in 1825; and he failed exactly as Barlow had failed, from assuming the same fact without knowing how to accomplish it.

Professor L. D. Gale (Mr. Morse's earliest scientific friend and adviser, and subsequently part owner of the Morse patents, in consideration of his aid rendered to Morse), "knowing the fact, and knowing how to accomplish it, and knowing the teachings of the discoverer of it, for the purposes of a telegraph," thus tells the world, in April, 1856, precisely how, and when, and where Professor Morse was initiated into the secret of making successful an electro-magnetic telegraph, which he did not before know, and could not avail himself of. Dr. Gale said:

"In reply to your note of the 1st instant, respecting the Morse telegraph, asking me to state definitely the condition of the invention when I first saw the apparatus in the Winter of 1836, I answer: This apparatus was Morse's original instrument, usually known as the type apparatus, in which the types, set up in a composing stick, were run through a circuit breaker, in which the battery was the cylinder battery, with a single pair of plates. This arrangement had also another peculiarity, namely, it was the electro-magnet used by Moll, and shown in drawings of the older works on that subject, having only a few turns of wire in the coil which surrounded the poles or arms of the magnet. The sparseness of the wires in the magnet coils, and the use of the single cup battery, were to me, on the first look of the instrument, obvious marks of defect; and I accordingly suggested to the Professor, without giving my reason for so doing, that a battery of many pairs should be substituted for that of a single pair, and that the coil on each arm of the magnet should be increased to many hundred turns each: which experiment, if I remember right, was made on the same day with a battery and wire on hand, furnished, I believe, by myself. And it was found that, while the original arrangement would send the electric current through a few feet of wire, say fifteen to forty (15 to 40,) the modified arrangement would send it through as many hundred. Although I gave no reasons at the time to Professor Morse for the suggestions I had proposed in modifying the arrangement of the machine, I did so afterward, and referred in my explanations to the paper of Professor Henry, in the nineteenth volume of the *American Journal of Science*, page 400 and onward." * * * "At the time I gave the suggestions above named Professor Morse was not familiar with the then existing state of the science of electro-magnetism. Had he been so, or had he read the a

preciated paper of Henry, the suggestions made by me would naturally occur to his mind as they did to my own. But the principal part of Morse's great invention lay in the *mechanical* adaptation of a power to produce motion, and to increase or relax at will. It was only necessary for him to know that such a power existed for him to adapt mechanism to direct and control it.

"My suggestions were made to Professor Morse from inferences drawn by reading Professor Henry's paper, above alluded to. Professor Morse professed great surprise at the contents of the paper when I showed it to him, but especially at the remarks on Dr. Barlow's results respecting telegraphing, which were new to him, and he stated at the time that he was not aware that any one had ever conceived the idea of using the magnet for such purposes."

From the preceding data, you and the "National Monumental Society" can readily determine whether the world is indebted to Professor Morse or to Professor Henry for the invention of the first practical electro-magnetic telegraph. Is it not obvious that had Dr. Barlow been aided by a Professor Gale, with the teachings of Henry, he would have crowned his invention of an electro-magnetic telegraph with success in 1825.

Is it not equally obvious that, without a Professor Gale to impart the teachings of a Henry, Professor Morse would have utterly failed in his plans for such a telegraph in 1837?

Dr. Barlow reached, in 1825, the same mechanical point that Professor Morse reached in 1837, and failed of success for the want of Professor Henry's discovery, for then it had not been made known. And, in 1837, Professor Morse must have failed without Henry's discovery, of which he was ignorant, although it had been made known to all men of science several years previously.

Then Barlow and Morse are inventors of exactly equal merit in the *electro-magnetic telegraph history*, although the former was in advance of the latter many years.

Barlow used the Moll magnet and Morse used the Moll magnet, and neither could succeed.

Barlow used the quantity battery and Morse used the quantity battery, and neither could succeed.

Neither knew how to propel the galvanic current to a distance, and neither knew how to generate the needful magnetic forces at a distance; and hence each failed to construct a practical electro-magnetic telegraph that could be worked at a distance from the operator beyond from "fifteen to forty feet."

Who invented the needful agencies to breathe the breath of life into the mechanism of each—of Barlow and of Morse, and of all other forms of mechanism for an electro-magnetic telegraph?

Undeniably, Professor Joseph Henry is that man; and "to him," I repeat, "our country, and beyond it 'the rest of mankind,' owe, first, last and forever, the highest and foremost distinction in their monumental symbols of telegraphic history."

In vain will ephemeral pretensions contest this honor. Time, the great unflinching touchstone of exact truth, will correct the errors of partisan and sordid sycophancy, and history, sublimated by true knowledge, will write the name of Henry at the head of the column of well earned, immortal fame in this department of human progress.

To such a monument I would cheerfully subscribe in the ratio of my means, but to none other that shall precede it, though flattering may be the encomium of having been an early coadjutor of Professor Morse.

I will thank you to make these sentiments known to the finance committee of the Monumental Association, with my highest considerations of respect for their patriotic motives.

I remain, with great respect, your obedient servant,
FRANCIS O. J. SMITH.

Insulation of the Atlantic Cables.

CONSIDERABLE fluctuations have taken place in the shares of the cable companies during the week. The official statement of the directors of the Anglo-American, issued, as alleged, in consequence of rumors to the effect that there was some loss of insulation, though not at all affecting the working of the cables, caused a very serious depreciation in price, and much

unnecessary anxiety to the holders of the shares, many of whom, it is to be feared, were induced by this ill-advised act of the directors to part with their property much below its real value. A second letter, issued by the board yesterday, states that this mysterious loss of insulation has been discovered by Mr. Willoughby Smith to be on the land portions of the Irish coast, and that it can be repaired with great facility. The question has been asked, and very naturally, why the directors did not find this out before making a statement which they must have known would have excited great, but, as it turns out, unfounded alarm among the holders of the shares. There had been rumors in circulation that something was wrong with the cables for some days before the company confirmed them by the publication of their first letter. Any reasonable person would have thought that the directors would have ordered an examination of the cables to be made before issuing a statement of this kind. They have an ample and costly staff of general manager and assistants, and they might surely, having known for some days, and even weeks past, of the "loss of insulation," have ordered the requisite tests to be made to ascertain the position of the property of which they were the directors on behalf of the shareholders. Instead of this, however, the directors officially announced something was wrong, that unfavorable rumors were in circulation on the subject, and that they proposed, after the issue of the circular, to send Mr. Willoughby Smith to Ireland to examine the cable! Valentia is scarcely twenty-four hours from London, and all this delay, so injurious to the property, so annoying to the shareholders, might have been prevented if the directors and managers, instead of sitting quietly by with their hands folded, had ordered a competent electrician to the spot to find out the nature of the injury, if any. By this neglect of the directors or their officials they tacitly encourage speculation and gambling in the shares, see a fall of about £20 in them, and then we are told that after all there is really nothing in it beyond a slight injury to the land line, which may be easily repaired. It was quite within the power of the directors to have ascertained this fact long since, and they might as easily have discovered that there was a slight fault in the land portion of the land line before as after the issuing of a circular which, as the result has shown, has caused most unnecessary and widespread alarm among the shareholders. The directors and their officials have been guilty of gross neglect in not instituting the necessary tests as soon as the reports reached them of the failure of insulation, and, to say the least, of great imprudence in adding the weight of their authority to Stock Exchange rumors as unfavorable as they have now been proved to be unfounded in their character. The shareholders have a just right to inquire why it is that a board of directors and an expensive staff of officers is kept up if they cannot obtain from them, when the necessity of the case arises, some reliable information as to the condition of their property.—*The Railway News.*

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

A Nest of Old Fossils.—Too many Ohms by Half.

MILWAUKIE, WIS., Jan., 1872.

TO THE EDITOR OF THE TELEGRAPHER.

THE uncompromising hostility to old fogyism which has always been a prominent characteristic of your lively little sheet, is, in my opinion, one of its greatest recommendations. While laughing, with the rest, over your amusing expositions of Western Union "science in high places," I have frequently wished that your peripatetic associate might some time find his way into this stronghold of antediluvian telegraphic fossilism, in order that we might enjoy his caustic remarks on what he saw in Wisconsin. Why, the Western Union is in the fore-front of civilization compared with the Northwestern Company! You talk about those "improved Western Union wires" between New York and Washington. Let a little sprinkle of rain fall on these lines and, presto! they are dead as Julius Caesar! Let me a tale unfold:

About a year ago an unprincipled adventurer from Chicago brought a galvanometer up here and commenced nosing around among the wires. In one of the La Crosse circuits, with the relays all out, he found 20,000 ohms. The other La Crosse wire gave him 32,000 ohms, with 25 relays in. These are each about 200 miles long. No. 1 to Prairie Du Chien, 200 miles, with 35 relays, 72,000 ohms! The Chicago chap was disgusted. I don't believe he ever saw such an almighty lot of ohms before in his life at one time! But when he found a circuit so full of ohms that his machine wouldn't measure them, and he allowed it was dead open, then the Northwestern boys showed him how they could work right straight through it by putting on 200 cups Grove, and getting up a current that would jump the break, ohms or no ohms. That made the galvanometer man sick, and he went home. He evidently never found quite so many ohms to the square mile since he went into the business as he did on the Northwestern.

Then, as for insulators, they won't even use the screw-glass. (N. B.—They are said to cost half a cent a piece more than the plain ones.) And the Brooks insulator. Goodness gracious me! You would think, to hear the Northwestern officials talk, that the Brooks insulator would give them the small-pox, sure! The favorite insulator here is what might best be described as a tarred stick—a sort of a narrow gauge nigger-head insulator, without any glass in it. Blockhead insulator would be the appropriate name for this invention. They are supposed to cost nearly five cents each.

Not long ago a number of new relays were got from somewhere and put in, but they wouldn't work, and the old gentleman sent them all back. The fact was, I suspect, that they didn't have ohms enough in them—only 200 or so. You can't do anything on the Northwestern wires if you are stingy with your ohms! Ohms are their "best holt." With a thousand of them in every relay, and a hundred in every mile of line, tar insulators, and plenty of Grove battery, how we apples swim—if it don't rain!

The proprietor of the Northwestern Telegraph Company is Mr. Z. G. Simmons, of Kenosha. He is a conspicuously prudent and economical man, as you have, doubtless inferred, and not, by any means, one of your theoretical chaps. He is likewise a Western Union director, and rendered invaluable assistance, during the memorable "onpleasantness," by sending several sheets of foolscap by telegraph, imploring Oliver Palmer to "stand firm," and Oliver stood, and thus the great Western Union kite, with the little Northwestern bob on the tail of it, continued to soar aloft. Mr. S. Robertson, the General Superintendent, is a worthy old gentleman. The memorable "battle of the insulators" on the St. Paul and Pacific road almost worried him to death, but since that was settled it has taken a great weight off his mind.

But I am trespassing on your crowded columns. I only meant to drop you a few lines, and if you think worth while to print them you may hear from me again soon.

BADGER.

Enterprise of the W. U. Telg. Co.—The Gold and Stock Reporting Telegraph System.—The Invention of the Electric Telegraph, etc.

WASHINGTON, D. C., February 7.

TO THE EDITOR OF THE TELEGRAPHER.

THERE is at present so little of direct telegraphic interest transpiring here that everything of that nature may be briefly summarized. The most important item is the fact that the Western Union Company has furnished its Washington office with a Siemens Universal Galvanometer, and the wires have been tested up during the dry weather. Whether it is intended to compare them with similar measurements in wet weather, or to rely upon them as a complete vindication of the management of Eckert and Bates, and their equipment of the lines with non-insulating glass insulators, and the crowding of a large number of those poorly insulated conductors upon one set of poles, is not known.

The Gold and Stock Telegraph Company are now erecting a line, and will shortly introduce in this city their system of furnishing gold, stock and commercial quotations, having obtained a sufficient number of subscribers to warrant the inauguration of the enterprise.

The publication of the correspondence furnished to the Smithsonian Institution by Mr. Henry O'Reilly has created a very earnest discussion of the question, To whom is due the credit of making practicable the magnetic telegraph? The discussion has already brought out a good deal of evidence establishing Prof. Henry's title to that honor.

A strong effort is being made to substitute the Wilson Electrical Gas Lighting Apparatus for that now in use over the dome, rotunda and hall of representatives at the Capitol, which is represented to be a very cumbersome and costly affair. The Wilson apparatus is used over the Senate portion of the Capitol, and, it is claimed, is very much more economical. The matter is now before the Committee on Public Buildings and Grounds, and is being very generally discussed in the local papers.

WASHINGTON.

Just What Might be Expected of Him.

OIL CITY, Jan. 29, 1872.

TO THE EDITOR OF THE TELEGRAPHER.

AMONG the special despatches from Washington, in the Pittsburgh *Commercial* of January 3d, appears the following:

"Postmaster General Creswell openly announces himself against the system of civil service reform, and which went into effect yesterday. He says that he believes in the old fashioned doctrines."

Exactly, and what are "old fashioned doctrines" in this connection? Simply this, "to the victors belong the spoils."

Creswell belongs to the party dominant, is one of the victors, and looks upon the telegraph as so much party pelf, of which he would like the captain's share.

In my article, printed in this journal of December 23d, I brand the proceedings of Creswell as an insult to our intelligence. I am glad to find I was not mistaken in my estimate of the man.

In the face of what has transpired in England there are men who still have the effrontery to offer in Con-

gress schemes for the postal telegraph. Out upon such barefaced soundrels! They deserve to be looked upon with suspicion by all men who believe in the soundness of our constitutional corner-stone—government only by consent of the governed. F. A. STUMM.

Personals.

Mr T. S. CUNNINGHAM, formerly of Denver, Colorado, has accepted a position with the Atlantic and Pacific Company at Ogden, Utah.

Mr. J. P. CALLAHAN has been appointed agent and operator, U. P. R. R., at Wabsatch, Utah.

Mr. W. J. PURDON has accepted a situation in the A. and P. telegraph office at Ogden, Utah.

Mr. J. F. FITZPATRICK has been appointed manager of the Ogden, Utah, office of the A. and P. Telegraph Company, vice John Donnelly, resigned.

Mr. ANDREW BRADBRIEN, of the Russell House A. and P. telegraph office, Detroit, Mich., has accepted the position of agent and operator for the D. L. and L. M. R. R., at Greenville, Mich., vice F. R. HUDSON, removed.

Mr. GRO. HAYWOOD, formerly of the Louisville, Ky., P. and A. office, has accepted a position with the A. and P. Company, at the Russell House, Detroit, Mich., office.

Mr. E. J. WOOD, formerly manager of the Western Union Battle Creek, Mich., office, has been appointed superintendent of the Peninsular Railway Telegraph Company, with headquarters at Battle Creek.

Mr. WM. M. BENET, formerly a night operator in the Detroit, Mich., office of the Montreal Telegraph Company, has accepted a position on the night force of the Western Union, Chicago, Ill., office.

Mr. CABBAGE, formerly of the Montreal Telegraph Company's Toronto, Ont., office, takes the position vacated by Mr. BENET in the Detroit office of the same company.

Mr. C. N. LANDER, operator, has been transferred from the McLeansboro, Ill., to the Enfield, Ill., station of the St. L. and S. E. Railroad.

Mr. THOMAS MOSS, of the night office of the D. and M. R. R. Telegraph at Corunna, Mich., has been transferred to the Pontiac, Mich., office of the same road.

Mr. FRANK HORTON, formerly of the D. and M. R. R. night office at Owosso, has accepted the situation with the same company at Corunna, vacated by Mr. MOSS.

Mr. E. H. BURRELL, of Port Washington, Ohio, has accepted the day office on the P. W. and B. R. R. telegraph.

Mr. DAN CREAMER retains the position of night manager of the Western Union Telegraph office at Chillicothe, Missouri (not Chillicothe, Ohio, as stated in THE TELEGRAPHER of January 13).

Mr. B. F. DILLON has resigned his position in the Kansas City, Missouri, Western Union office, and returned to the South.

Mr. N. E. JACOBS is manager of the W. U. and R. R. office at Weston, Mo., on the K. C., St. Joe and C. B. R. R.

Mr. C. M. MILLER is operator at Corning, Mo., on the C. B. and St. Joe Railway.

Mr. S. E. INGRAM is still manager of the W. U. office at Lexington, Mo.

Mr. H. G. BUCKINGHAM is manager of the W. U. office at Fort Scott, Kansas.

Mr. S. C. HATHAWAY is operator and express agent on the H. and St. Joe R. R. at Hamilton, Mo.

Mr. J. S. TURNER is day operator at Plattsburg, Mo., on the N. M. R. R.

Mr. C. A. MONT ROSS is manager of the R. R. office on the N. M. R. R. at Vibbard, Mo.

Mr. CHAS. McDILL is operator in the General Superintendent's office at Hannibal, Mo.

Mr. C. J. BERSOR is manager of the W. U. office at Chillicothe, Mo.

Mr. CLARK, formerly of Toronto, has resigned his position as ticket agent and operator at St. Joe, Mo., and accepted a similar position with the Council Bluffs R. R., Hamburg, Iowa.

Humors of the Telegraph.

A WASHINGTON, D. C., correspondent sends us the following amusing incident:

"A short time since a telegram was sent from Baltimore to this city, addressed to 'McPhail, S. A. P. O. D., (Special Agent Post Office Department), and was received 'McPhail Sapod.' The operator receiving thought the name a strange one, and asked its repetition, when it came again, Mc Phail Sapod, the sender writing the letters of the last name, as the receiver supposed, very slow and distinct. A boy was sent out with it, and all the hotels visited, but Mr. Sapod could nowhere be found, and he was about giving up in despair when he met an ex-telegrapher, who happened to know both McPhail and Sapod, who directed him to the proper room in the Post Office building, where the message reached its destination, and a hearty laugh was had over the 'bull.'"

The Telegraph.

Election of Officers Atlantic and Pacific Telegraph Company.

At a meeting of the trustees of the Atlantic and Pacific Telegraph Company, held at the office of the company in this city on Friday, February 2d, the following officers were elected for the ensuing year: John Duff, President; W. H. Guion, Vice-President; E. D. L. Sweet, Executive Manager; George Bliss, Treasurer; Alfred Nelson, Secretary. Executive Committee—Sidney Dillon, John H. Mortimer, C. S. Bushnell, L. P. Morton, W. D. Snow, Judge Emott, Oliver Ames.

Transatlantic Telegraphs.

THE *Mechanics' Magazine* comments upon transatlantic telegraphs, publishing the circular which was printed in THE TELEGRAPH of January 27th, from the Secretary of the Anglo-American Telegraph Company, in regard to the decreasing insulation of the Atlantic cables. It says: "The grave doubts which have been for some time entertained as to the uninterrupted duration of telegraphic communication with America, have been confirmed by this circular. It is a strong confirmation of the fact that a fourth cable is necessary, and the sooner the work is set about the better, notwithstanding the opposition which such an undertaking must meet with in certain quarters. It is quite true that, even supposing the 1866 and 1867 cables to become either temporarily or permanently useless, we should have the French (1869) cable, for a time, to fall back upon. But it must not be forgotten that the latter cable was laid with a slight fault in its insulating covering, and that this slight fault is by no means improving. The lifetime of the best cable is not too long for the shareholders, but the lifetime of a cable with a fault in it may unfortunately be much too short for them. However well this cable may behave, it is quite evident that it will not do for the commercial public, with the present current of transatlantic traffic, to depend solely upon two or three cables, now the communications are so rapidly increasing, and the revenue is so steadily augmenting.

"A new company has lately been formed for a new transatlantic cable, the manufacture of the core of which, we are glad to hear, has already commenced. A committee has, it seems, been formed for the purpose of opposing the laying of this intended cable, one of the objects of which is ostensibly to effect a reduction of the rates. It is pointed out by this committee that, even if successful, such a movement would only end in all the cables getting into the same hands, to the injury of the public, with no advantage beyond a temporary reduction of the now excessive rates.

"It is needless to say a word upon the policy which obviously dictates this opposition, and we are convinced that, whether a competing line finds favor, or the Anglo-American and the French Atlantic Company enter into arrangements to lay a new cable, the object will and must be supported in the city. We should regret to see any damaging competition set on foot, but we should equally regret to see transatlantic telegraphy become a monopoly."

Foreign Telegraphic Notes.

THE telegraph cable from Java to Australia has been successfully laid. The Australian Government propose to charter a vessel to convey despatches between Port Darwin and Normantown until the overland line could be completed.

The Danish Great Northern and the China and Japan Telegraph Companies are about to be amalgamated, under the title of the Great Northern Telegraph Company. The capital of the new company is fixed at £1,500,000, of which, however, shares to the amount of only a million sterling will be issued for the present. The arrangements are all perfected in the detail, but require the confirmation of a general meeting, which is convened for that purpose on February 22.

A national Russian Telegraphic Correspondence Company has been founded at St. Petersburg with a large amount of capital, and commenced business on the first instant (old style). The operations appear to be conducted on a very grand scale, as they promise to furnish political, mercantile, and general news from all parts of the world every day. In all the more important and populous cities and towns they will have agencies. Those at Warsaw, Taganrog and Odessa are already in function. The Government appears to support the undertaking, which has been organized by the Aulic Councillor, Ousoff, who is the chief manager of the concern. Hitherto the Russian newspapers were but very imperfectly furnished with telegraphic intelligence, clubbing together to divide the expenses, and receiving their telegrams in an indirect manner through the medium of a small agency at St. Petersburg, who then forwarded them to Moscow.

Among the numerous motions for an alteration of the Telegraph Convention which occupied the attention of the International Conference at Rome, one of the most important relates to the use of the languages employed in writing telegrams. According to existing arrangements messages may be sent over the wires of the Indo-European lines in any language used on that route. The proposal that finds most favor is that one limiting the languages to be used to three—English,

German and French—and telegrams written in any other tongue to be considered as in cipher, and treated accordingly. Another motion of importance was to register all telegrams, so as to be able to give an account of what becomes of them if lost, mislaid, or sent to a wrong place. The German representatives, and those of some other countries, pointed out that this arrangement had been introduced on their lines for some time, and was found to work well and give the public great satisfaction; it was therefore extremely desirable to extend the principle generally to every country.

The Anglo-American Telegraph Company have notified that the decrease of insulation reported on the 10th instant has been found, from a series of tests conducted by Mr. Willoughby Smith, to be in the land portion of the cables upon the Irish side, and that the faults can, in consequence, be repaired without difficulty, and at a moderate expense.

The Société du Cable Transatlantique Français (Limited) have called a special meeting at the Terminus Hotel, Cannon street, on Monday, the fifth day of February, at which resolutions will be proposed for an arrangement to do away with the existence of different classes of shares, and bring them all under one head. It is understood that the proposal of the directors to take power to largely increase in future the additions to the reserve fund, will be strongly opposed by an influential section of the shareholders, who consider that such additions should be limited by the articles of association, as hitherto.

The total number of messages forwarded from postal telegraph stations in the United Kingdom during the week ended January 13, 1872, was 239,424—an increase on the corresponding week of 1871 of 69,880.

Advices from Australasia to December 23d have been received by steamer at San Francisco and telegraphed from that city. The submarine telegraph cable from Java to Port Darwin was successfully laid on the 20th of November last. It was working well. Successful progress was being made in the construction of a land line in Victoria to the Gulf of Carpentaria. Good reports had been received from the transcontinental telegraph line constructors.

Telegraphic Brevities.

ALBERT A. ROGERS, for many years a responsible clerk in the Western Union telegraph office at Boston, Mass., has absconded with between two thousand and three thousand dollars of the company's funds.

Extraordinary atmospheric electrical disturbances occurred at Toronto, Canada, on Monday morning last. It was for a considerable time impossible to work the wires, and the instruments appeared to be in a blaze of light. The phenomena were supposed to be in connection with the auroral display generally observed.

Festivities Attending the late International Telegraph Conference at Rome.

THE correspondent of the *New York Herald* at Rome, under date of January 2d, writes as follows in regard to the festivities of the late International Telegraph Conference in that city:

"The banquet given by Mr. Cyrus W. Field to the members of the Telegraphic Conference was a very successful affair, and a number of good speeches were made. The following is the text of Mr. Field's opening discourse:

"Gentlemen—I cannot find words to express what I feel. I see around me at this table the official representatives of twenty-one different countries, the inhabitants of which number between five and six hundred millions and speak twenty-six different languages—as also the representatives of the principal telegraph lines, belonging to private companies, which have been completed within the last few years, at a cost of more than three hundred millions of francs. You, my friends, control, to a great extent, the telegraphs of the world. Let us extend the circuit around the globe; let us connect every isle of the sea; let us make this great power which God has given us a blessing to the whole human race. I will not detain you by dwelling upon what the telegraph has done. It speaks for itself; it is now bearing us the glad tidings that on this, the first day of the new year, peace and good will prevail among men. Within five years from to-day I believe that you will be able to send from this ancient city a message around the globe in less time than I have been speaking these few words. I sincerely hope that a kind Providence may watch over and return you in safety to your homes, and permit us all to meet in the capital of the great empire of Russia in 1875, to consider what we can do to extend still further the benefits of the telegraph. I regret the absence by sickness of our late President, Commander D'Amico; and I am sure you will all cordially join me in wishing that the Telegraphic Conference may succeed in its good work of facilitating international intercourse, and in drinking the health of our esteemed President, M. Brunner de Wattenwill."

"Nearly all the Government delegates and representatives of private companies spoke in succession, and I was much pleased with the earnest and unaffected manner of the Japanese delegate, Mr. Cloda, who addressed his colleagues in fluent French, and afterwards conversed with me for some time in excellent English upon the progress of civilization in his native country, and the commercial and national prospects of Japan.

"Submarine telegraphs were represented not only by

Mr. Field, but by Sir James Carmichael, Sir James Anderson and other gentlemen whose mission to the Conference is that of convincing Governments, through their delegates, that the influence of private companies, representing such capitals as ten or twenty millions sterling, are deserving of some consideration in the framing of International Telegraphic Conventions.

"This evening the members of the Conference have another dinner offered them by the Minister of Public Works, in the great hall of the Capitol, and to-morrow morning they set out on a three days' excursion to Naples, where they have been invited by the municipality, to visit all the objects of interest in and around that charming city."

Annual Report of the Commissioner of Patents.

THE Annual Report of the Commissioner of Patents made to Congress, as required by law, for the year 1871, shows a total amount received of \$678,716.46, and expenditures of \$562,091.64. There were filed during the year 19,472 applications for patents; number of patents issued, including reissues and designs, 13,033; applications for extensions, 204; extended, 158; caveats filed, 3,366; number of patents expired during the year, 2,654. A plate is added, showing graphically the business of the office from 1836 to the present time, in such form as to represent to the eye the comparative business of the different years.

The office has received and deposited in the Treasury of the United States, during the year, \$116,624.82 more than its entire expenditure.

The Commissioner advocates the restoration of the old style of annual reports—abolished by joint resolution of Congress in 1871—in a modified form, or the provision of some adequate substitute. He says: "These reports, with all their defects, were read and studied with great avidity by inventors and mechanics throughout the country, and the perusal of them has, undoubtedly, resulted in giving to the world very many valuable inventions and improvements."

Among other important recommendations made by the Commissioner is one that section forty-eight of the Patent Law—which provides that parties, except parties to interferences, if dissatisfied with the decision of the Commissioner, may appeal to the Supreme Court of the District of Columbia, sitting in banc—be repealed; and that in its stead a section be introduced authorizing appeals to the Supreme Court of the District from the decisions of the Commissioner on questions of law, and that such appeals be in the nature of writs of error.

He also recommends that the law be so amended as to authorize the Commissioner personally to permit, in applications for reissue, either the specifications, drawings or models, to be amended so as to show what is already shown in either one of them. Also, that section fifty-three be so amended as to require that notice of all such applications for reissue as seek to enlarge the original claims, be published in the *Official Gazette* for at least four weeks previous to the day set for examining the same, and that opposition be allowed, as in extension cases.

Mr. POWERS, a civil engineer of Chicago, petitions Congress to place at his disposal 300 cannon, 20,000 blank cartridges, ten miles of insulated wire, an electric battery and a few men. He wants to see if he can make it rain.

New Patents.

For the week ending January 23, 1872, and bearing that date.

No. 122,944.—ELECTRO-MAGNETIC ENGINE. Claude Victor Gaume, Williamsburgh, N. Y.

The armature J formed of a central bar, attached to wheel H at its centre, and having cross heads between centre and ends that are provided with short bars upon their ends, parallel to central bar, and whose ends project equally upon the outer and the inner sides of said cross heads, as described.

For the Week ending January 30, 1872, and bearing that date.

No. 123,198.—TELEGRAPHIC INSULATOR AND BRACKET. John Robertson, Cardondale, Pa.

1. The tubular insulator A, provided with the slot a and projecting lugs b b, substantially as herein set forth and described.
2. The sockets g, formed at the ends of the apertures through the bracket, to receive and protect the lugs b b, as set forth.
3. The tubular insulator A, constructed with a slot, a, and projecting lugs b b, combined as described with a bracket, B, having slit d, for the purpose specified.

Recent British Patents.

No. 1,400.—W. B. Lake, Southampton Buildings, London. PRINTING TELEGRAPH. Dated May 24, 1871.

Two type or character wheels are placed upon a shaft, revolved by a ratchet from an electro-magnet. The paper passes between an impression pad and a thin shield, an opening is provided for the impression from one wheel, the shield interposing to prevent an impression from the other. The parts are shifted at blank places in the type wheels, being brought, one over the shield and the other over the opening, in position for printing. The shifting movement is derived from the printing lever through a lever provided with stops, and connected with the type wheels or the pad and shield. A notched disc is employed in connection with an arm that is shifted by the aforesaid movement. This arm prevents the parts becoming accidentally displaced, the type wheels are automatically arrested, in order to bring the receiving instrument into unison with the sending instrument, a stop is set to swing upon a stud, and one part of the stop is in a screw upon the type wheel shaft; the continued rotation of the said shaft brings the other part of the stop near the type wheel, and in a position to take a pin projecting from the type wheel and arrests its further movement, but electricity still acts to bring up any other of the receiving instruments. Upon charging the magnet this stop will be lifted out of the screw thread and returned to the point of beginning; the stop will be returned to a normal position every time an impression is made.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.

FRANK L. POPE, Associate Editor.

SATURDAY, FEBRUARY 10, 1872.

Telegraphic Monopoly.

THE TELEGRAPHER has consistently opposed monopoly in telegraphy, for the reason that it is neither for the interest of the public who use the telegraph, or of those who are employed in the telegraph business as a means of livelihood, that such a monopoly should exist. We have seen no reason as yet to change our opinion in regard to the matter; and while this paper is in no sense (as has been frequently charged) the organ of what are termed the "opposition companies," we have maintained the principle of competition as far as we have been able to exert any influence in the matter.

We regret, however, that owing to the vicious principles upon which most of the so-called opposition companies have been organized, and the faulty and inferior construction of their lines, there has so far, since the great consolidations of 1866, been really no adequate competition for the telegraph business of the country. With two or three unimportant exceptions these companies have scarcely paid expenses, much less earned anything for their stockholders. As a matter of fact, most of them have lost money, and are now more or less deeply in debt.

If this condition of things was the result of unavoidable causes we might regret the loss of capital invested, and counsel, in the interests of the stockholders—not of the public—that a monopoly being ultimately inevitable, it should be a public instead of a private, a Government instead of a Western Union monopoly. But it is not inevitable or unavoidable, and we hope yet, though it would seem almost like hoping against hope, that somebody or some set of men may take hold of these lines, and combine and manage them in such a manner as shall make them successful, practically and pecuniarily. They now combat and oppose each other as much or more than they do the competitor of them all. Their capital is watered and inflated beyond all show of reason or of possibility of paying dividends. Their lines are mainly poorly built, badly insulated, and disadvantageously located, and the actual expense attending a considerable portion of their business is more than is received for it. Under these circumstances it is not surprising that they not only do not pay but are almost swamped with indebtedness. It is safe to assert that most of them never can pay until they are reinsulated and reconstructed.

If the existing lines outside of the Western Union Company cannot be brought under one management, and that a reformatory and progressive one, they must be ignored, and a new system established, which shall embody the improvements in material, insulation, and equipment that are available, and that can be used to construct such a system of telegraph as has never yet been seen in this country. The practice of building telegraphs for the benefit of promoters and contractors exclusively must be abandoned, or telegraphic competition is practically at an end. With such a system as we have indicated lower rates and better pecuniary results would be attained; telegraphic employes would be benefited with the rest; good lines, good instruments, and good management would insure the employment of the best class of operators, and enable the payment of salaries commensurate with their abilities, and the importance of the positions occupied.

With such a system, thus administered, similar reform and improvement on the part of the Western Union Company must follow, or that company would be ruined. With two organizations thus competing for business the public would be better served and at reduced charges; and all telegraphic experience has shown that the only practical limit to telegraphic business is the ability of the lines to transmit promptly and satisfactorily.

There could then be no reasonable demand for Government interference, and any attempt to bring the lines

under Government management would meet only with opposition from all but interested parties.

If what we have advocated be not realized, the Western Union will eventually again become a practical monopoly, and the public will demand that the Government shall take possession of and operate the telegraph system of the country.

The Signal Service.

THE annual report of Brigadier-General A. J. MYER, chief signal officer to the Secretary of War for 1871, has been issued from the Government printing office. The signal school of instruction at Fort Whipple, Virginia, has been continued during the year. The first systematic synchronous weather observations were taken at twenty-four stations, and transmitted by telegraph on the first of November, 1870, at 7.35 A. M. The stations on the East Atlantic coast commenced reporting January 15th, 1871, and the section from Chicago to San Francisco on the second of February following. During the past summer the gulf stations and those in the Ohio and Mississippi valleys were added to the list.

Owing to a misunderstanding as to the powers of the United States in relation to telegraph lines, as respects priority of Government business, and the rates to be paid therefor, as expressed in the Act of 1866, the arrangement existing with the Western Union Company for the transmission of reports was suddenly terminated by that company. In this emergency the competing companies promptly tendered their services, and the reports were scarcely interrupted. The International Ocean Company, with a praiseworthy spirit of accommodation, continued the service without interruption upon their lines.

Several conferences, held between the officers of the telegraphic companies and the legal advisers of the Government, resulted in a satisfactory adjustment of the matter, both as regarded the signal service and the general telegraphic business of the United States, and it is stated that all relations with the telegraph companies are now satisfactory. The telegraphic service at the signal office is under the immediate supervision of GEORGE C. MAYNARD, formerly of the Western Union Washington office.

An extract from the report of the inspector appointed to visit the different observing stations, shows that the inhabitants of at least one locality fail to properly appreciate the labors of the observer. He says: "Indignation meetings have been held, and resolutions passed to drive the observer from town, as it was believed his instruments caused the unexampled bad weather and large amount of rain that has fallen there lately." This occurred in Lake City, Florida.

The reports from different observing stations shows that the reports have been transmitted with great regularity, except from stations reached by the Northwestern Telegraph Company, whose wires appear to be subject to a great amount of interruption and uncertainty.

Very much interesting and useful meteorological information is embodied in the report, which we have not space to refer to at length. Gen. MYER is entitled to the highest credit for the industry and ability he has exhibited in organizing and carrying out this exceedingly useful system, in the face of difficulties which will readily be appreciated by our telegraphic readers if by no one else. It is certain that in the future its operations will be extended in connection with other countries, and its sphere of usefulness greatly enlarged.

A New and Splendid New York Western Union Office.

THE Western Union Telegraph Company have arranged for the purchase of the property on the northwest corner of Broadway and Dey street, on which it is proposed to erect a new and splendid building for their executive and other offices in this city. The property is fifty feet front by one hundred and twenty-five feet deep, and is now owned by Dr. EVANS, of Paris. The old buildings at present on the site will, of course, be removed. The price to be paid for the property is understood to be \$300,000. We understand that the Company propose to erect a building seven stories in height, which shall occupy the entire site, and which will be arranged with special reference to the constantly increasing requirements of the business, and

which, when completed, will make the handsomest and in every respect most complete and convenient telegraphic establishment in the world. It will be equipped with elevators and other modern conveniences. The upper stories will be used for operating rooms, clerical purposes, etc.

It will require about two years to complete the building and have it prepared for occupancy. Such a building as is proposed to be erected will be an ornament to the magnificent thoroughfare, and cannot fail to enhance the value of other property in its vicinity.

Mr. Beck's Speech on the Postal Telegraph.

THE speech of Hon. JAMES B. BECK, of Kentucky, delivered in the House of Representatives, at Washington, Saturday, January 27th, on the Postal Telegraph scheme of the President and Postmaster-General, and the proposed telegraphic monopoly of Mr. GARDNER G. HUBBARD, is an exhaustive and masterly effort. He has evidently devoted much time and attention to the subject, and carefully studied it in all its bearings. It may, with truth, be considered unanswerable, and has confounded the advocates of a Government telegraph monopoly. We regret that we cannot, on account of limited space, and a pressure of other matters upon our columns, republish this speech in full, for it is a complete exposition of the arguments against the schemes referred to.

Originally Mr. BECK was favorably inclined towards the postal telegraph project, but his investigation of the subject changed his views, and convinced him of the dangers and disadvantages of Government telegraph control and management.

Johnson & Nephew's Telegraph Wire.

DURING the last year 16,000 miles of the celebrated wire manufactured by JOHNSON & NEPHEW, of Manchester, England, has been imported and sold by L. G. TILLOTSON & Co., of this city, the sole agents for the United States of this firm. The reputation which this wire has obtained has created a demand for it, both in this country and in Europe, unsurpassed by any other description of iron telegraph wire.

The attention of all parties interested is called to the advertisement of this wire by Messrs. TILLOTSON & Co.

The Callaud Battery.

Messrs. GRAY & BARTON, of Chicago, Ill., the general agents in the United States for the manufacture and sale of the CALLAUD battery, by an advertisement in this paper inform all who desire to purchase where it may be obtained. The superiority of this battery for telegraphic purposes has been amply demonstrated, and has created for it a demand which has heretofore been limited by the difficulty in procuring the needed supply. Hereafter all orders sent to either of the agents mentioned in the advertisement will be promptly filled.

A Telegraphic Situation Wanted.

WE would call the attention of railroad telegraph Superintendents to the advertisement of an operator accustomed to train despatching and the ticket business, who desires to obtain a situation. Satisfactory references will be given as to his ability and reliability to any parties who may require his services.

The First Atlantic Cable Message.

THE *Orange* (New Jersey) *Journal*, of January 27th, publishes the following interesting item:

"At the recent meeting of the New Jersey Historical Society in Trenton, Mr. John A. Wright, telegraphic operator, presented to the Society a piece of pink silk, which he had used on the 16th day of August, 1858, on the House printing telegraph machine, instead of paper, to take the first message through the Atlantic cable transmitted by the Queen of England to President Buchanan, which was the first evidence of the success of this great event—the greatest perhaps in the last half century. The society received the gift with a vote of thanks, and this little historical reminiscence will be deposited among the valuable archives of the society."

We presume our excellent friend WRIGHT did not intend to give the Jersey Historical Society the impression that the piece of ribbon presented was the identical slip on which the first cable message was received at Heart's Content, Newfoundland. It would have been somewhat difficult for him to have received it on a printing telegraph instrument on a 3,000 mile submarine circuit.

16,000 MILES OF "JOHNSON'S" WIRE

USED BY THE
TELEGRAPHS OF THE UNITED STATES
DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
MANCHESTER, ENGLAND.

Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

TELEGRAPH LINES

OF ANY LENGTH FULLY EQUIPPED WITH

WIRE, INSULATORS, BATTERIES,
INSTRUMENTS, ETC.

L. G. TILLOTSON & CO.,
No. 8 DEY STREET,
NEW YORK.

Sole Agents for "Johnson's" Wire.

" " " American Compound Wire.
" " " Cauvet's Patent Screw Insulators.
" " " Sam'l O. Bishop's Insulated Wires and Cables.
" " " Brooks' Patent Paraffin Insulators.

Manufacturers of every description of

TELEGRAPH APPARATUS.

CALLAUD BATTERY

KEPT ON HAND, AND ORDERS FILLED BY

H. R. DAVID,
17 Platt Street, New York.

W. MITCHELL McALLISTER,
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AND BY

GRAY & BARTON,
AGENTS FOR THE UNITED STATES,
479 State Street, Chicago, Ill.

SITUATION DESIRED.

A SOUND OPERATOR, accustomed to Train Despatching and Ticket Business, wants employment. Good references.

Address,

"A. B. Q."

Care Editor TELEGRAPHER.

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OF TRANSPORTATION, ENGINEERING AND RAIL-
ROAD NEWS.

Presents the most elegant appearance, is the most progressive in its ideas, contains the

LATEST RAILROAD NEWS,

Including announcements of the Election or Appointment of Railroad Officers, and the fullest information of

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The Railroad News Department of the Gazette is more complete than that of all other Railroad Papers combined, and this fact will render it invaluable to all Railroad Employers who hope for advancement.

The Engineering and Mechanical Department is under charge of an Experienced and Practical Engineer, and articles relating to Railroad Construction, Machinery and Operation, will be contributed by the ablest Mechanics and Scientific Men.

During the past year the Railroad Gazette has presented

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Which have been unequalled by any technical paper in the country.

Subscription Price, \$4.00 a year.

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AMERICAN FIRE ALARM AND POLICE TELEGRAPH.

GAMEWELL & CO., Proprietors,
104 CENTRE STREET, NEW YORK.

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Special Agent for Virginia and North Carolina.

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Special Agent for New England.

THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

Albany, N. Y.,
Alleghany, Pa.,
Boston, Mass.,
Bridgeport, Conn.,
Buffalo, N. Y.,
Baltimore, Md.,
Chicago, Ill.,
Cincinnati, Ohio,
Columbus, Ohio,
Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
Washington, D. C.,
Worcester, Mass.

The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM AND POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original FARMER & CHANNING PATENTS, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION OF CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

TELEGRAPH WIRE.

CHARLES T. CHESTER

Desires to call the attention of
Telegraph Companies and Line Builders

To a new article of
TELEGRAPH LINE WIRE

OR

Unequalled quality and uniform excellence.

While great care and attention has been given to instruments and insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European governments, only fit for fencing purposes. Many tons of such material now remain here utterly unsaleable and unfit for use.

The able men who by their researches in Electricity, have solved the problem of Telegraphy through thousands of cable miles, have not neglected the subject of aerial lines, and their labors have fixed for Europe a standard of excellence, and means for preserving it, far exceeding that with which we have been hitherto content.

We extract from the minute and specific details a few of the requirements of a

STANDARD GOVERNMENT WIRE.

1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable, and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated, as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be coiled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications

A BREAKING STRAIN OF 1,260 POUNDS

or No. 8 wire is called for, and a capability of

Twisting upon itself 18 times

without rupture in a length of six inches.

Being convinced, from a long experience in construction of lines and sale of wire, of the necessity of this rigorous and faithful system of test applied uniformly, and to every bundle of wire sold by us, we have made complete arrangements to supply, and now offer for sale

This uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market.

We shall designate it by the Trade Mark,

CHESTER, A 1,

and our customers ordering it may be sure of receiving an article always uniform and always the very best.

The capacity or endurance of No. 9 is

21 to 23 twists upon itself,

in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

COMPARATIVE AND COMPETITIVE TESTS

with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 29. The omission of the elongating process would increase the flexibility and the tenacity.

Although the Wire has been

PROVED IMMENSELY SUPERIOR

to that commonly sold, its price will closely approximate to that of the inferior article.

CHARLES WILLIAMS, JR.,
(ESTABLISHED 1856.)

109 Court Street, Boston,

has for sale the various kinds of Office and Magnet Wires, including Cotton covered, Silk, Gutta Serena, Painted, Fancy, and DAY'S KERITE COVERED WIRE.

AMERICAN COMPOUND
TELEGRAPH LINE WIRE.

COPPER FOR
CONDUCTIVITY.

STEEL FOR
STRENGTH.

The superiority of the COMPOUND TELEGRAPH WIRE, compared with iron, consists in its LIGHTNESS, reducing by over fifty per cent. the number of poles and insulators required;

Relative TENSILE STRENGTH, homogeneity and elasticity—decreasing the liability to breakage from cold weather, sleet, etc.;

CONDUCTIVITY—insuring great improvement in the working of lines in any condition of the weather;

And in its DURABILITY, which greatly exceeds that of the best galvanized iron wire;

Altogether resulting in a very great reduction in the cost of maintaining and working telegraph lines, while, at the same time, insuring

EFFICIENCY AND RELIABILITY.

Address—

American Compound Telegraph Wire Co.,

ALANSON CARY, Treasurer,

No. 234 West 29th St.,

New York.

Agents in New York,

L. G. TILLOTSON & CO.,

8 DEY STREET.

ATTENTION, OPERATORS!

PATENTED



APRIL 4.

We would call your attention to our

Telegraph Operators' Badge Pins.

Having completed our arrangements to manufacture, by putting in new machinery, and with a full force of workmen, we are now ready to supply the great demand for these Badge Pins. They are made of 18 Carat Gold, and are perfect fac-similes of the present Morse or Curved Lever Keys and new style Western Union Straight Lever and Faneys Base Keys. We are making two different sizes—one to be $\frac{1}{2}$ of an inch long and the other one inch long. Also, a very small, neat Badge Key Pin for Lady Operators. These are the only Badge Pins ever got up exclusively for Operators.

We are also manufacturing a complete set of Railroad Badge Pins, for Conductors, Baggage Masters, Brakemen, Station Agents and others, consisting of Punctures, Passenger Cars (Pullman Palace Pattern), Switch Targets, Coupon Tickets, &c. These Badges are all made of the most approved patterns.

PRICE LIST.

Key Pin, Oval Base, one inch long,.....	\$6 00
Key Pin, Oval Base, $\frac{1}{2}$ inch long,.....	5 00
Key Pin, Fancy Base, one inch long,.....	7 00
Key Pin, Fancy Base, $\frac{1}{2}$ inch long,.....	6 00
Key Pin, Oval Base (for Lady Operators),.....	5 00
Key Pin, Fancy Base (for Lady Operators),.....	6 00
Key Pin, Charm for Watch Chains,.....	\$5 00 and 6 00

The above are made with straight or curved levers.

Conductors' Punch Pin,.....	\$4 00
Passenger Car Pin (Pullman's Palace Pattern),.....	6 00
Switch Target Pin,.....	4 00
Coupon Ticket Pin (Enamel),.....	4 00

The above are all made of 18 Carat Gold (Warranted). Persons ordering Key Pins, be particular in giving style of Lever and Base wanted.

Any of the above will be forwarded by Express (C. O. D.) or by mail, registered, by remitting amount and 25 cents extra to pay postage and registration fee. Address,

HARVEY & DOW,

ST. JOHNSBURY, Vermont.

RUSSELLS' AMERICAN
STEAM PRINTING HOUSE,
23, 30, 32 CENTRE STREET,
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EXECUTES ALL DESCRIPTIONS OF
BOOK, JOB AND COMMERCIAL PRINTING.
TELEGRAPH PRINTING A SPECIALTY.

CHARLES T. CHESTER,
104 Centre Street,
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TELEGRAPH ENGINEER,
AND MANUFACTURER OF
INSTRUMENTS,
BATTERIES,
AND EVERY DESCRIPTION OF
TELEGRAPH SUPPLIES.

BUNNELL'S PATENT REPEATER.

These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

JONES' LOCK SWITCH-BOARD,

a most compact and reliable Switch, forming a clean spring-locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

EXCLUSIVE AGENTS OF

A. G. DAY'S

KERITE,

OR

COMPOUND RUBBER COVERED WIRE.

SUBTERRANEAN & AERIAL WIRES,

OF THE

HIGHEST INSULATION.

We are now prepared to furnish, after an experience of three years, an Insulated Wire, which can be buried in the earth or exposed to rain and sun, or to the vapor of acids, without injury. Professor SILLIMAN, who has exposed it to the most destructive agencies, finds that it remains uninjured in an atmosphere of ozone, which would destroy gutta-serena in a few hours. It exceeds glass or any other known substance as a non-conductor.

We have made special arrangements to furnish this article for office purposes at a reduced rate.

ALSO, TO FURNISH

IRON CLAD CABLES,

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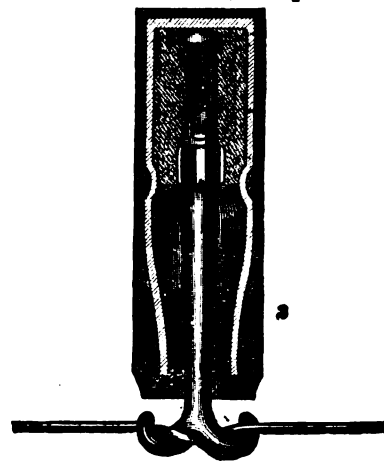
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The Telegrapher.

A Journal of Electrical Progress.

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Original Articles.

Induction in Overland Telegraph Lines.

By DAVID BROOKS.

For many years the effects of induction—as far as overland telegraph lines were concerned—were popularly supposed to be a myth. The inductive phenomena which were shown in the experiments of the laboratory, and in the operation of long submarine cables, were not believed to affect in any perceptible degree whatever the working of ordinary telegraph wires.

During the year 1868 two wires upon the same line of poles were extended from Paris to Berlin, and insulated with unusual care, for the purpose of working the Hughes printer direct between the two cities. These wires were found to work at times without the slightest difficulty, while at other times there was so much interference between the two wires that it became necessary to open one before the other could be operated at all.

There was a great diversity of opinion in regard to the cause of this trouble. It was brought before the *Commission de Perfectionnement* of French telegraphs—a jury of scientists—among whom were such men as M.M. Gauguain, Guillemin, Guyot, Gavarrat, Blavier, Du Moncel and Hughes. These very able electricians seem to have been divided in opinion as to the nature of the difficulty. It was finally ascertained, however, to result from the inductive action of the current in one wire upon the other.

Precisely the same difficulty has been observed in the working of some of the long circuits in this country, and an equal diversity of opinion has existed as to the true cause of the disturbance. By some it was supposed to be merely the result of defective insulation—in other words, the leakage of currents from wire to wire—when in reality the cause was exactly of an opposite nature, that is to say, the insulation was too good. Induction cannot be shown in any form except where the insulation is very high, and it is, in fact, an effect of high insulation.

It was a noticeable characteristic of the disturbances upon the Paris-Berlin wires that they were well marked only when the weather was clear and cold. In warm and damp weather no difficulty was experienced. At such times both wires could be worked simultaneously at full speed. Similarly, during the winter of 1870-71, the operators employed on the long circuits running through Iowa and along the line of the Union Pacific Railroad, on the eastern slope of the Rocky Mountains, were greatly annoyed and perplexed by these manifestations. The wires of the railroad company extended along one side of the track and those of the telegraph company upon the other. Whenever an unusually dry and cold spell of weather occurred, the wires running on the same poles were apparently "crossed." Every cold snap brought all the repairers out on a search after these mysterious crosses, but in vain. When the weather moderated then the crosses vanished. It was found in such cases that the opening or closing of one of these circuits produced the opposite effect upon the parallel wire, and as this circuit was operated by repeaters, in connection with other circuits, for the transmission of through business between New York and San Francisco, these extraneous breaks and closings were transmitted to Chicago and San Francisco, and thus the embarrassment often extended into localities where it might be raining at the time, or the conditions such as to render local induction impossible.

With a Leyden jar and a sensitive astatic galvanometer inductive action may be shown with a single cell of battery. When the jar is connected in the circuit the currents flow into the metallic surfaces until they become statically charged, and the quantity of charge is proportional to the tension of the battery, and also to the area of the metallic surfaces or coatings of the jar and their proximity—that is, inversely proportional

to the distance separating the metallic surfaces from each other.

If we take two wires worked from the same battery, and stretched parallel upon the same line of posts, we then have conditions analogous to those existing in the Leyden jar. The surfaces of the wires perform the functions of the metallic coatings; the air between the wires serves as the dielectric instead of the glass jar. We will suppose the length of these wires to be 1,000 miles each, extending between two stations, A and B (Figure 1), and that there are 50 cups of battery on each terminal. A opens the circuit on No. 1 wire, and B also opens on No. 2. As there is no resistance interposed by the earth between A and B, the two batteries are, in point of fact, but one battery of 100 cells. The principle is exactly the same as if the arrangement were connected up as shown in Figure 2. Now closing the key on No. 1 causes a current from the opposite pole of the battery to rush into and charge No. 2, and the flow of this current will actuate a relay in No. 2, and close the local circuit for an instant, when it is required to be open. In this enlarged modification of the Leyden jar, instead of one square foot for each metallic surface we have say two hundred thousand square feet, and the effect is proportionately greater. Instead of one eighth of an inch the surfaces are sepa-

would render the inductive effects still more apparent. To a certain extent this is unquestionably true, but at the same time there would be a practical advantage realized, for the reason that the sensitiveness of an instrument cannot be increased indefinitely while the battery at the same time is being reduced. A relay of two hundred units resistance is as unsuitable for a circuit of a thousand miles in length as the magnet of an ordinary sounder used as a relay for a circuit of a hundred miles. The sounder magnet could be worked, it is true, but the battery power required would make it a needlessly expensive operation in practice.

I am confident that, with a relay wound with fine wire to 1,000 Siemens units resistance, with a light armature, and say one fifth the battery power ordinarily used on those long circuits, far better results can be obtained than by means of the instruments and appliances now in use. Again, if the Siemens polarized relays were used, and this battery divided, one half being used to close and the other half to release the armature, the inductive embarrassment could be still further avoided.

The great difficulty of working the Atlantic cables rapidly arises from induction, and few people have even the most remote idea of the time and expense that has been incurred in endeavoring, as far as possible, to surmount this difficulty. The practical result of all these efforts may be seen from the fact that they now use but two cells of Minotti battery (equal in electro-motive force to about one Grove cell) and an instrument with from five to six thousand units resistance. It would, therefore, be natural to infer that similar means—that is to say, sensitive instruments and comparatively small batteries—are also best adapted to work land lines, where induction has become an embarrassing feature.

(To be continued.)

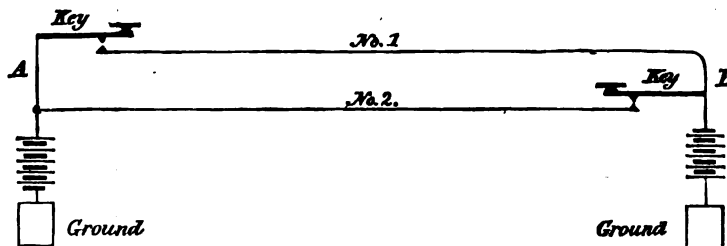


FIGURE 1.

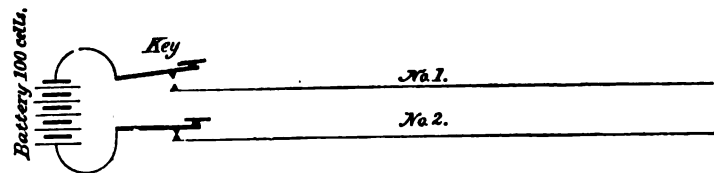


FIGURE 2.

rated, say four feet, or 384 times as far apart, and consequently the effect is 384 times less than it would be if the surfaces were the same distance apart as in the original jar. Again, we have a battery in the latter case 100 times greater than in the former, and the effect from this cause would be 100 times greater. Thus we have precisely the same conditions, but in greatly varied proportions.

On a line 1,000 miles long, with the key open at one end and 50 cells of battery at each end, we have a tension of 100 cells throughout the whole length of wire, provided the insulation is perfect; but, if the insulation is defective, the charge or accumulation is proportionately less, as the leakage is greater.

The suggestion has been made of placing artificial leaks between the wires, but this plan has been objected to on the ground that it would have a tendency to aggravate the trouble by causing a "mixture of the currents." In Mr. Culley's remarks on the effects of induction he says that "a slightly leaky buried wire can be worked faster than one that is perfect," and that the speed of signalling through the Malta, Alexandria and Persian Gulf cables was increased by the application of artificial leakages. Similar effects were observed in the working of underground wires, both in Prussia and in England.

The real objection to the employment of artificial leaks is that they would continually need adjusting, and in rain would require to be taken off altogether.

It has also been proposed to use a much smaller number of cells of battery, and more sensitive relays, as the less the battery power the less the inductive charge. This plan has also been opposed, the theory being advanced that the sensitiveness of the relays

of that important body, than has heretofore been published. It is extracted from a communication to the *New York Tribune*, from an occasional correspondent at Rome, under date of January 14th:

"The Telegraphic Conference, after sitting for six weeks and three days, adjourned *sine die* to-day at the Capitol. All the business before it was finished in the sitting of yesterday, and the meeting to-day at 12 M. was merely a formal one for the final signature of the documents to be transmitted to each Government represented. The body, although constantly feasted and otherwise entertained, has been a working one, and consequently its meeting here in Rome cannot be considered to have been without good influence, either as an example to the Italians or for the amelioration of telegraphic intercourse.

"There have been twenty-five public sittings since the Conference was first opened by the Foreign Minister, Visconti Venosta, until to-day, when it was closed by him in a neat little speech. During the interval the members worked earnestly, both in private committees at the Hotel de la Minerva and at their own hotels and apartments. At the first sitting the official delegates occupied themselves with the matter of giving a *locus standi*, or admission to the Conference, to the representatives of private companies. The privilege of being present at and taking part in the debates was granted, but without right of voting. Three committees were appointed—one on Tariffs, one on Regulations, and one on revising the Paris and Vienna Convention in regard to telegraphy. These committees worked daily and well. The various amendments proposed on the part of the different countries and the private companies

were taken into consideration during a general sitting, fully discussed and decided, or referred to the committee for disposal. Nothing has been done, either very novel or important, as an improvement upon the rules and rates already established, but otherwise the debates generally exhibited a liberal and progressive spirit. The ground was taken, on the part of the official delegates throughout, that the companies should not be admitted to equal rights with the Government telegraphic administrations, unless they were willing to abide by all the rules and rates fixed in the Conference. The companies declared that it would be simply ruinous for them, as private enterprises, to allow their tariffs to be made or revised by others, and therefore, while willing to keep up amicable relations as heretofore with all Government lines, they could not join the Convention officially. This conclusion was finally announced on the part of the private submarine companies, after their representatives had been long in vain seeking to bring down the high requirements put forth by the Governments. The regulations for international telegraphy were only very slightly changed—the modifications being so slight as to be scarcely worthy of mention.

"The first article of the *Règlement* being under discussion, the delegate of Norway proposed the incorporation into the Convention of the same dispositions for the protection of submarine cables as those made for the protection of land lines; but, being persuaded that such a proposition would not receive a support, nor be ratified probably by the various Governments, the delegate, Mr. Nielsen, withdrew it. Mr. Cyrus W. Field, who arrived after this discussion, carried this point after a more serious, persistent and formal effort. Turkey proposed a single meridian for the fixing of hours for use in all telegraphic bureaus, and Italy proposed to count the day by twenty-four hours, instead of cutting it in two series of twelve hours each, but these motions did not prevail. The Morse and Hughes telegraphic apparatuses were maintained as the sole instruments to be allowed for the next three years. In relation to language the actual dispositions were maintained, allowing each contracting State the right to propose its language, which is to be admitted in all business bureaus on its presentation; conventional language or cipher is also to be admitted, but without any assumption of responsibility on the part of any office. Italy proposed to introduce a new category of despatches, that of "urgent despatches," entitled in transmission to priority over ordinary telegrams. Both the delegates of Italy and Belgium contended that such a system had worked most successfully in their respective countries; but it was opposed on the ground that it would be building up a monopoly for the rich, and interfere with a more general extension of telegraphic benefits, and was not adopted. Many articles, to which amendments were offered referring purely to the manner and routes of transmission of messages, were left as they were revised at Vienna in 1865. Twenty words, the old allowance for single messages, is retained, and one franc is still fixed as equivalent for the moneys of the different countries. For English money ten pence was accepted by the representatives of the Post-office as corresponding to a franc.

"The company representatives made earnest efforts to secure the official privileges consequent upon becoming members of the Conference, while claiming the right to alter their own tariffs (whether reducing or increasing the rates) at will; but their propositions to this effect were not entertained, and they leave Rome considerably disappointed and disgusted with official pretension. The official table of the tariff, as now revised, has not yet been printed; but, while I am unable to send a copy of it in this letter, I am enabled to state, from an examination of it, that the internal rates remain unchanged, and the international taxes have only undergone a diminution here and there, much to the disappointment of the public, which is eager and anxious for cheaper facilities in telegraphing between countries. M. De Luders, the delegate of Russia, informed the Conference, at the close of the year, that their designation of St. Petersburg as the place for the holding of the next Telegraphic Conference had met with the approbation of the Emperor Alexander, and, in accordance with instructions sent him, he had, therefore, the honor to invite all the delegates present to meet in St. Petersburg in 1875. Both the official and the company delegates, although separately, opened subscriptions among themselves to buy bronze statues as presents for the officers of the Conference."

Old and New Telegraph Cables.

THE primitive cables do not appear to have been constructed with much attempt to proportion, to any extent, either their mechanical strength to the depth of water in which the cables were to be laid, effects of currents, &c., or the degree of insulation to the peculiar requirements of the line; nor, indeed, could the latter be effected, as in the earlier attempts at cable manufacture and laying the tests applied were of the crudest description. The fact that a message could be sent through the cable was considered a sufficient guarantee of its electrical soundness. It was due to these causes that such a large number of the earlier cables either never worked at all or became inoperative in a very short time. The first attempt of any importance at a refinement in cable manufacture was made in the first Atlantic cable. Here, however, it was carried to too great an extent, and sufficient allowance was not made

for the occurrence of any accident which might put an undue strain on the cable, such as would be caused by stormy weather during the laying; neither were any steps taken to protect the cable from corrosion; so that, on any attempt to raise it for repair, the rusted wires would give way, and the cable could not be raised to the surface of the sea. These difficulties have, to a great extent, been overcome, so that with the present system of paying out machinery, which works with almost clock work smoothness and accuracy, and that accurate and searching system of electrical tests, the manufacture and laying of a cable is of secondary interest, and excites but little public attention.

The cables now generally adopted are of two kinds. The first of these are very similar to those first constructed. They consist primarily of "the core," which is constructed with various weights per mile of copper and insulating material, according to the length and required working capacity of the line. The core is first served with a coating of hemp, tarred, to preserve it as far as possible from decay; this hemp acts as a padding for galvanized iron wires, which are laid on spirally around it; the whole is then coated with a second serving of hemp, which is covered with a silico-bituminous compound, laid on hot. This being pressed on by grooved rollers, gives the cable a smooth, round surface. In the second type of cable the iron wires, before being laid on, are each of them served separately with the coating of hemp, the outer serving being omitted. It is the latter type of cable which was used for the 1865 and 1866 Atlantic lines. In both types the first serving is laid on wet, so that any fault which might occur in the insulation during manufacture can immediately be detected and traced. The object of coating the iron wires with hemp is to prevent any broken ends from projecting and catching in the paying out gear; an accident would be certain to cause the fracture of the cable. Altogether, therefore, this last improvement is one of the most important that has been effected in the manufacture of cables. The idea of light cables—that is to say, cables with only a hemp or other light material sheathing—does not seem to have many advocates amongst the leading manufacturers and engineers, and it is doubtful whether the public could ever be got to risk their capital in them; for, although undoubtedly cheaper in manufacture, they are likely to turn out costly ventures—and it is the more doubtful since the present system of metal sheathing has been found to answer so well.—*The Mechanics' Magazine*.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Congress and the Telegraph.

WASHINGTON, D. C., February 14.

TO THE EDITOR OF THE TELEGRAPHER.

TELEGRAPH matters receive but very little attention in Congress at the present time, and there is but little transpiring of sufficient interest to warrant a weekly letter. For this reason, and knowing that at the present time your columns are crowded with more important matters, I omitted my usual communication last week.

On Thursday, February 1st, a bill was introduced in the Senate by Senator Sawyer, and a similar bill in the House by Mr. Myer on the 6th of February, to encourage and promote telegraphic communication between America, Asia and Europe, which was referred to the Committee on Foreign Relations in the Senate and the Committee on Foreign Affairs in the House.

This bill gives to the American and East India Telegraph Company the exclusive right, for twenty-one years, to construct, land and maintain a line or lines of telegraph or submarine cable on the Pacific coast of the United States, to connect the American and Asiatic coasts by telegraphic lines, wires or submarine cables; provided, that the company shall begin to lay the cable within two years from the passage of the act.

The act further provides that the Secretary of the Navy shall detail two or more steam vessels to assist in surveys, soundings, laying cable, transporting materials, etc. It also gives priority to Government despatches, and authorizes the protection of the lines, stations, and officers of the company by the military and naval forces of the United States.

This is an important act, and it will not be likely to pass without considerable opposition from other parties interested in Eastern telegraphy.

In the House, on Monday last, Mr. Wood, of New York, reported from the Committee on Foreign Affairs his bill relating to telegraphic communication between the United States and foreign countries.

This measure was before the Fortieth Congress, and grew out of the difficulty relative to the landing of the French cable at Duxbury, Mass. It allows all foreign cables to land on our shores, provided the same privilege is accorded to our citizens in the country from which the cable starts. It provides rules for the general order of transmission of despatches, so as to enable Government messages to receive due precedence.

This bill is very likely to become a law substantially

in its present state. It was ordered printed and recommended.

Very little is heard now about the postal telegraph schemes. They are generally conceded to be practically defunct for the present Congress. The able, candid and exhaustive speech of Mr. Beck on this subject, has apparently given all the projects for Government connection with or control of the telegraphs a quietus for some time to come. CAPITOL.

The American System of Train Despatching Safe and Reliable.

TO THE EDITOR OF THE TELEGRAPHER.

I NOTICE IN THE TELEGRAPHER for February 3d an article on train despatching, based upon the inquiry, "Is the American System of Train Despatching an unsafe one?" I have had some experience in the business, and have not yet seen any reason to consider it unsafe. In the communication quoted from the *Railroad Gazette*, contributed by "Hindoo," I notice that he considers it unsafe, however, and has an idea that trains should be run with the assistance of station masters. For one I cannot see any good reason for this. Is not the station master as liable to make mistakes as the telegraph operator at the station where the train is held, or to whom the train order is given for the train for which a meeting point is being made? "Hindoo" refers to Western roads, especially, in discussing this important matter in railroad management. The system of train despatching in use on Western roads is similar to that used on Eastern roads, and it is but seldom that an error occurs through the negligence of the train despatcher. Errors more frequently occur through the inattention or neglect of the men who are running the train, by their giving "13" to an order without properly understanding it, as they should do.

"Hindoo" further says that it would pay for the railroad managers to establish a better and safer mode of train despatching than the present one. If there is any better or safer system, I, for one, would very much like to have it explained.

The only way that I can see to run trains by the assistance of station masters is as follows:

Agent at "A" calls up the agent at "B" and inquires of him how "train No. 3" is. "B" replies an hour late. The agent at "A" sees that train No. 4, which is on time, has sufficient time to make "B" for No. 3; so he gives the agent at that station an order to hold train No. 3 until train No. 4 arrives, to which he gets his "13," and then gives No. 4 an order to run there. This, in my opinion, is dividing the responsibility of moving trains among too many persons, and there will be no use, under that system, for such an officer as a train despatcher.

"Hindoo" asserts that superintendents do not often hear how many mistakes, hair breadth escapes and delays of trains are made through inattention or want of judgment. I think that he is slightly mistaken in this assertion, for there are always some persons on the line who have little else to do than to watch and report such things to the superintendents. In fact, they seem to be too good to keep.

Now, if there be a better mode or system by which trains can be run with more safety and with less unnecessary detention than the present system, I would be pleased to learn of it and its advantages through the columns of THE TELEGRAPHER. M.

Insulation Phenomena.

MINERVA, IOWA, Feb. 5.

TO THE EDITOR OF THE TELEGRAPHER.

SINCE we have been using Brooks insulators I have noticed that the two wires they are on ALWAYS work better after a few hours' rain, or a soft snow storm of two or three inches, like we have had to-day, than they do in perfectly dry weather of four or five weeks' duration. The circuit seems to be much stronger and steadier. The box relays (or sounders) we use follow the key much easier and firmer; and at the same time, after a thorough test (with poor facilities), I am unable to find the least escape along the whole line, and am satisfied, if there is any, it would only be perceptible on a galvanometer. On the old line (glass insulation) the usual and familiar escapes, high adjustment, &c., are always expected and found. "Will you explain why the Brooks insulated lines work BETTER after a few hours' rain than in perfectly dry weather?" A. B. E.

[The effect observed by our correspondent is not owing to the insulators, but most probably arises from the existence of unsoldered and rusty joints in the line wire, which conduct much better when wet than when dry. The ground wires may possibly have something to do with it. The application of a proper testing instrument would soon disclose the nature of the difficulty.—ED. TELEGRAPHER.]

A Practical Suggestion for a Telegraphic Organization.

MOBILE, ALA., Feb. 5th.

TO THE EDITOR OF THE TELEGRAPHER.

WITHOUT venturing to discuss, further than I have already done in a previous letter, any plan or basis of organization, I suggest that a Convention of Telegraphers be held in August next, either at St. Louis or

New York, for the purpose of discussing and deciding, definitely and finally, this question of a telegraphic association, and, if necessary, to decide the exact character and time of the organization. Let there be one delegate from each telegraphic district in the country, without regard to any particular company, and let him be appointed now, in order that he may supply himself with all possible information bearing upon or in any way influencing the subject; that is to say, he should inform himself fully of the disposition of all the operators in his district in favor of or in opposition to the scheme, so as to be able to present intelligent views to the Convention—thus enabling it to act sensibly and with authority. I see no reason why a satisfactory result might not be reached in this way, and respectfully ask your opinion, as well as that of others interested.

ALABAMA.

Answer to Correspondent.

C. L. M., Wisconsin.—The later editions of *Modern Practice of the Electric Telegraph* contain a very full description of, and instructions for working the Callaud battery. We reprint a part of that article in the present number of THE TELEGRAPHER.

Personals.

Mr. C. W. BRADLEY, a practical telegraph operator, who has had very large experience in railroad matters, has been appointed Superintendent of the Second and Third Divisions and the Franklin Branch of the Atlantic and Great Western Railroad.

Mr. J. A. MURRAY, an old timer, has resigned his position in the Western Union Telegraph office at Quincy, Ill., and gone to his home at Adrian, Mich.

Mr. A. R. PIPPITT has resigned his position in the Keokuk, Iowa, telegraph office, and accepted the position in the Quincy, Ill., Western Union office vacated by Mr. J. A. MURRAY.

Mr. GREEN, formerly of the T. P. & W. R. R. office at Peoria, Ill., has resigned, and accepted the W. U. telegraph office at Keokuk, Iowa, vice A. R. PIPPITT, resigned.

Mr. JOHN FULLER has been appointed Superintendent of Telegraph of the Central Railroad of New Jersey, with headquarters at Easton, Pa. He will also have charge of the lines and offices of the Western Union Company on the route of that road and branches.

Mr. W. A. FENN, for some time past in charge of the telegraph station at the Navy Yard, Brooklyn, N. Y., has been appointed division operator at Bushwick for the South Side Railroad of Long Island.

Mr. ALEXANDER F. WARE, formerly of New Orleans, has been appointed manager of the Lake Charles, La., Western Union office.

Mr. EDWARD HAVILAND has charge of the Highland, Texas, Western Union office.

Mr. C. CAMPBELL has charge of the Clear Creek, Texas, Western Union office.

Mr. FRANK VOELCKER has been appointed manager of the San Marcos, Texas, Western Union office.

The Telegraph.

By Cable.

A NEW ATLANTIC TELEGRAPH CABLE COMPANY.

LONDON, Feb. 8.—A new Company, which proposes to lay a telegraph cable direct to New York, has been registered. One of the features of its prospectus is the promise to fix tolls on despatches at twenty shillings for ten words.

TENDERS FOR LAYING A TELEGRAPH CABLE BETWEEN SPAIN AND THE CANARIES.

MADRID, Feb. 13.—The Government invites tenders for the construction and laying of a telegraphic cable between Spain and the Canaries, "to be extended to some Spanish possession in America."

The Montreal Telegraph Company.

It is gratifying to learn, since the Montreal Telegraph Company took possession of its splendid new building at the corner of Wellington and Scott streets, that the increase of business and the general convenience afforded to the public has proved the necessity which existed for the erection of the office. It is admitted on all hands that the telegraphic system of Canada is unequalled in the world, both in its proportion of mileage to the population and to the low rates charged. In England it is claimed that, under the Government system, the number of offices has been increased to four thousand, while in Canada, at the present time, we have little short of a thousand. These, in proportion to our population, gives us nearly twice as many offices as they have in England. And the uniform rate in England is twenty-five cents for a single message, while in Canada messages are sent double the distance it is possible to send them in England for the same amount. In this connection it should be borne in mind that in England the lines are built through well settled districts of country, which afford much greater facilities for keeping the telegraph in re-

pair than in Canada, where the lines are run through vast forests and unsettled parts of the country, thus increasing the difficulties and expense of keeping the lines in order.—*The Daily Leader* (Toronto, Canada.)

Telegraph to South Australia.

On the 6th of January Adelaide was in telegraphic communication with "Alice Springs," north of the MacDonnell Ranges, a distance from south to north of 1,100 miles. From Port Darwin, where the submarine cable is already landed, the land line reaches the Roper river, towards the south, about 180 miles; so that only between 300 and 400 miles remain to be finished before London will be in direct telegraphic communication with Adelaide, Melbourne and Sydney. A very large force of men, material, cattle and horses, is concentrated in the northern territory, for this last section of the work, and finished it would have been by this time had not a great mortality broken out among the transport cattle early in last October. A great many of the draught bullocks died, while the others became, from weakness, unfit for present work. Intelligence of this disaster did not reach Adelaide till the end of November, when the most energetic steps were immediately taken to repair it. A large number of fine horses were purchased, more men engaged, a steamer of 1,100 tons was chartered for their conveyance, and on the 6th of January left Adelaide for the Roper direct—the whole being under the personal direction of Mr. Charles Todd, the able Director of Telegraphs in South Australia, who proceeded in the steamer, and will remain in the northern territory till the line is completed and communication perfected. Another large ship with more horses was to follow this steamer immediately. Meanwhile, the rainy season had set in in the Port Darwin district, in the month of December, and late telegrams from that place by cable speak of the country being a good deal flooded in consequence. Mr. Todd would reach the Roper about the end of this month, and his first endeavor will doubtless be to organize a horse estafette service, to bridge over the unfinished gap between the Roper and Alice Springs. It is, therefore, quite possible we may have through telegrams early in February, and the entire completion of this great work can also not be far distant.

Postal Telegraph Cards.

On and after the 5th of February a change will come into operation which will greatly facilitate the transmission of postal telegrams. Stamped telegraph message cards will be issued at the rate of one shilling each, for the use of persons who either cannot or do not desire to send messages to the telegraph office. These cards are arranged in precisely the same way as the forms in use at the ordinary offices, and includes spaces for twenty words. They are to be filled up by the sender and deposited in any post-office, when they will be forwarded, free of charge, at the next clearance of the box. The shilling stamp on the card covers the cost of such a message within the United Kingdom (the Scilly, Orkney and Shetland Islands excepted), the Channel Islands, and the Isle of Man, including free delivery of the same within the limit of one mile of the Terminal Telegraph Office, or of the town postal delivery of that office, in cases where that limit extends beyond one mile. Should this limit be exceeded, or any special mode of transmission required, a charge will be made on the person to whom the message is addressed. A payment of 3d for every additional five words, or fraction of five words, will also be demanded from the addressee, should the total number exceed twenty. The postal telegraph card is of precisely the same size as the ordinary half-penny post card; and, besides the arrangements above specified, contains a space for the insertion of the date and hour of posting. A person depositing one of these cards in a box will be able to ascertain, from the table of collections on or over the box, at what hour his telegram is likely to reach its destination. Allowance must, of course, be made for the transmission between office and office; and it must also be borne in mind that most of the telegraph offices in the kingdom are closed between 8 P. M. and 8 A. M.

The post-office authorities have also issued an official book, giving, together with other particulars, the names of all the telegraph offices in the United Kingdom, and a statement of the hours during which they are open. The book has been prepared for the guidance of clerks in telegraph offices, but will probably be issued at an early date for sale to the public. The first part contains the names of postal telegraph offices, together with neighboring money order offices, stating their distance from each other. The second part adds the names of railway stations and other places where telegraphic business is transacted on behalf of the Postmaster General. In this Code Book the names of more than 5,000 telegraph offices are given, with the hours of attendance at each on Sundays and week days. This manual, which is an actual necessity to the telegraph clerk, will also prove of the greatest convenience to the general public.—*London Telegraph*.

A telegraph operator at Keyport, the other day, who inadvertently overcharged his battery, was suddenly struck senseless, and it was with much difficulty that his friends were able to bring him to consciousness.

Foreign Telegraphic Notes.

THE Inspector General of Telegraphs in the Argentine Republic has notified that on the 16th of November he opened to the public service 400 miles of telegraph, from Cordova to Tucuman, belonging to the Argentine National Government, and on the 1st of December 354 miles from Parana to Corrientes—being extensions to 638 miles already open—making a total of nearly 1,400 miles of telegraph, exclusive of provincial and railway telegraphs. On the 1st of January next the tariff on the national lines was to be reduced to a universal charge of 1s. The staff are now constructing the land line to the point where the country joins Brazil, to complete the communication to Rio.

The total number of messages forwarded from postal telegraph stations in the United Kingdom during the week ending January 24, 1872, was 238,223—an increase of 68,197 on the corresponding week of the previous year.

New Patents.

For the week ending February 6, 1872, and each bearing that date.

No. 123,438.—MAGNETO-ELECTRIC MACHINE. Almon N. Allen, Pittsfield, Mass.

The arrangement of a magnetic cylinder, A A, formed as herein described, and inclosing the core B with the helix F, substantially as set forth.

No. 123,439.—LIGHTING GAS BY MEANS OF ELECTRICITY, &c. Almon N. Allen, Pittsfield, Mass.

1. The liquid displacing bulb D, in combination with a flexible diaphragm, and with a cup containing a liquid seal, and communicating with one or more gas burners, substantially as herein shown and described.

2. The secondary burner I, in combination with the diaphragm B, the cup E, liquid displacing bulb D, battery poles k k', and main burner H, substantially as herein set forth.

3. The compartments b c, communicating with each other through a small aperture, in combination with a liquid displacing bulb, and with the pipes leading to the secondary and to the main burner, substantially as described.

No. 123,441.—TELEGRAPHY. William C. Barney, Washington, assignor to FRANKLIN STEELE, Georgetown, D. C.

1. The method herein described of sending a message over the ground line from a transmitting to a receiving instrument before it has made a transit of the wire—that is to say, by placing the transmitting instrument between the positive pole of the battery and ground, and connecting the air line with the negative pole of battery, substantially as described.

2. The method of arranging the message receiver or message repeater between the ground wire E and negative pole a of the battery, as and for the purpose described.

No. 123,449.—ELECTRO-MAGNETIC RAILWAY SIGNAL AND SWITCH TENDER. Hugh S. L. Bryan, Liberty, Mo.; antedated January 25, 1872.

1. The combination of the shafts a b, arms l f, plate n, having insulated Morse characters raised on it, and platinum points m, in connection with the wires and battery of a galvanic circuit, as specified.

2. The combination of shafts a b, weight B, arm A, pan A', trough C, arm i, and balls k, as described.

No. 123,490.—TELEGRAPH APPARATUS. George Little, Rutherford Park, N. J.

Two electro-magnets and a vibrating armature, in combination with a local circuit connected with one of the electro-magnets and with switches, substantially as specified, for directing the main line current either through the other electro-magnet or through both of the electro-magnets, substantially as set forth.

No. 123,491.—TELEGRAPH RECEIVING AND TRANSMITTING INSTRUMENT. George Little, Rutherford Park, N. J.

1. The grooved roller, stationary lifting blade and delivery slide, constructed and employed substantially as and for the purposes set forth.

2. A rounding saddle upon the delivery slide, for curving the strip of paper in lifting the same from the roller, substantially as and for the purposes set forth.

No. 123,527.—ELECTRICAL APPARATUS FOR PREVENTING RAILWAY ACCIDENTS. Charles Veruy and Adrien Veillet, Lille, France.

1. The wiper D or its equivalent, connected to a locomotive or car, and acting on a section wire, d, in combination with a key, n, and an electro-magnetic alarm, secured in the engineer's stand or car, substantially in the manner set forth.

2. The subject matter of the above claim, in combination with a wiper, C, connected to a locomotive or car, and acting on sectional line wires c c' and an electro-magnetic alarm E, secured in the engineer's stand or car, the whole forming a complete signal apparatus, for the purpose and substantially as described.

Recent British Patents.

No. 1,444.—W. R. Lake (Hazelton, Lake & Co.), Southampton Buildings, London. PRINTING TELEGRAPH APPARATUS.

This printing telegraph contains two contiguous type wheels, turning separately on a fixed shaft; each type wheel has a ratchet wheel with a lever and pawl. The two levers swing on the same axis as the armature of the type wheel magnet, and a sliding bolt connects one of them with the armature and disconnects the other; the bolt is moved by magnetism, this current being directed automatically at certain positions of the type wheels, or else the printing magnet is made to act through intermediate mechanism, so as to rotate either one of the type wheels, the change being effected when both have been turned to blank spaces, so that the operator at the sending station can make use of either of the type wheels at the receiving station, and this by the use of only one wire, the printing resulting from reversing the current.

No. 1,792.—E. A. Mallock, Harley street, Middlesex. ELECTRIC CONDUCTORS. Dated July 8, 1871.

The improved electric conductor is a single copper wire, around which iron wires are wound or twisted to form a strand.

Born.

DAVIN.—At St. Pierre-Miquelon, a daughter to Mr. MAT. DAVIN, operator in the Boston, Mass., Western Union Telegraph office.

Married.

HENNESSY—ROGERS.—At Albany, N. Y., Dec. 29, 1871, M. D. HENNESSY, of Danvers, N. Y., to Miss SOPHIE ROGERS, of New York.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.

FRANK L. POPE, Associate Editor.

SATURDAY, FEBRUARY 17, 1872.

Atlantic Telegraph Cables.

As our readers have learned from the statements and articles which we have copied from English newspapers of late, there is a great agitation in England for the laying of additional telegraphs between that country and the United States. Great dissatisfaction has been developed with the charges of the Anglo-American and French Cable Companies, which now hold a monopoly of Trans-Atlantic telegraphy. The profits of the three cables now in operation are represented to be very large, and this fact of itself would be sufficient inducement to capitalists, if assured of the continuance of a profitable business, to enter into competition for it.

Recently the price of the shares of the Anglo-American Company rapidly advanced to £140, and apparently the managers of the Company became alarmed at this rapid appreciation. An official statement was published that the insulation of the Anglo-American cables was failing, and that WILLOUGHBY SMITH had been sent to Valentia to test them up, and, if possible, discover what and where the difficulty was. A few days subsequently another statement was published, to the effect that Mr. SMITH had found the decline of insulation in the connecting land lines, and that the cables were intact. The whole affair, if it had occurred in this country, would have been generally characterized as a stock-jobbing arrangement, and it certainly has this appearance. Unless it is considered in some way for their interests to do so, corporations are not given to making public facts injurious to their property unnecessarily. In the case under consideration, even if the statement were true, it had confessedly not impaired the usefulness of the cables, no difficulty having been experienced in working them at any necessary speed. Until the difficulty had been thoroughly investigated, and its nature and extent fully ascertained, there could have been no ordinary requirement for making its existence public. Again, with an experienced staff of electricians and operators at Valentia, the idea that there could be such a misapprehension of the locality of the fault, if any really existed, is, to use a popular but expressive phrase, "too thin."

The object was probably, in the first place, to check the too rapid appreciation of the shares of the Company; and, in the second place, to discourage investments in competing cables. The first was very effectually accomplished; whether the other was realized remains to be seen.

It is stated that a new cable company has been organized, and the manufacture of the core of the cable actually commenced, but we think that there is much reason to doubt the truth of the latter statement. It is not stated where the new cable is to start from on the other side or to land on the American coast. No arrangements have been made for obtaining permission to land the cable in the United States, or for business or connections on this side. It would naturally be supposed that any *bona fide* competing cable company would necessarily arrange such important matters before securing the capital required, or ordering the construction of a cable, which, for all that is known or intimated to the contrary, is to commence nowhere, and end somewhere in the vicinity of sundown.

It has also been urged, and is yet strongly urged by some of the Anglo-American shareholders, that that company should proceed to lay a fourth cable. As the present cables owned by the company are occupied only for a portion of the twenty-four hours, it is difficult to understand why they should put down a fourth cable, at a large increase of capital, so much in advance of a requirement for its use. The only explanation for this would be the desire and design to head off other parties, who would be likely to interfere with a very

valuable monopoly. If it be really and seriously intended to lay this fourth cable, it must be for this purpose.

As the matter now stands we do not anticipate the success of either of the projects for a new Atlantic telegraph cable herein referred to. In fact, neither of the many schemes presented and advocated up to this time seem to us to have the necessary elements to secure success.

We think that the rates of charges upon the existing cables might be very properly and profitably reduced. Although we are not the advocates of what is termed cheap telegraphy, we believe that the maintenance of a rate of tolls so high as to unduly limit the business, even if temporarily profitable, will, in the long run, prove unadvisable. The irresistible tendency is towards a reduction of tolls and a popularizing of ocean telegraphy—and, if it cannot be obtained through existing companies, it must, at no distant day, be otherwise accomplished. Capital invested in telegraphy should be adequately compensated, but telegraph managers must learn that the valuable franchises conferred upon them are accompanied by duties and obligations to the public which it is neither wise nor safe to ignore.

That the development of business between Europe and America will eventually call for many additional cables we have no doubt. Whether the time for initiating additional cable enterprises has yet arrived is a question. It is more probable that the next Atlantic cable will land on some other than the British coast, and perhaps develop a new source of business and of revenue.

A Humbugging Telegraph Institute.

In a recent number of THE TELEGRAPHER we reiterated what we have so often stated in regard to the false and extravagant statements contained in the circulars of self-styled Telegraph Institutes and Colleges. We especially referred to a concern located in St. Louis, but which we have since learned has a branch at New Orleans. This article was copied into the *New Orleans Times* of January 27th, and seems to have disturbed a party named MCEACHEN, who procured in a subsequent issue of that paper the following contradiction:

"We are assured by Mr. P. MCEACHEN, who is connected with the schools for teaching telegraphy in the cities of Chicago, St. Louis and New Orleans, that the statement contained in *The Telegrapher* of the 13th, and copied by the *Times* of yesterday morning, is without foundation, and can have no application to the school in this city."

We do not desire to enter into a controversy with this MCEACHEN, who once wrote us a letter saying that he intended to quit the business as soon as the pupils he was putting through in another similar institution at Buffalo, N. Y., had finished their term, and who has imposed upon us in other ways heretofore. When we wrote the first article we did not know that this fellow was connected with the St. Louis concern, and that fact confirms us in our previous opinion, formed upon reading the circular, that it was a humbugging affair.

We now repeat what we before stated in regard to this so-called Telegraph Institute, that its circular, which we have before us, is a pack of lies from beginning to end. The statements in regard to the facility with which persons can become good operators, and the inducements which exist for entering the business, the character and amount of labor required, and the compensation which awaits graduates of the concern, are entirely untrue; and he or she who is deceived thereby into investing money therein is not wise.

The Callaud Battery.

In answer to correspondents who have asked for information in regard to the CALLAUD battery, we reprint from the fifth edition of *Modern Practice of the Electric Telegraph* a part of the section of that excellent work upon this superior and popular form of battery for telegraphic purposes. The manner of setting up this battery is as follows:

"A sufficient quantity of soft water is poured into each jar to fill it to a point above the upper surface of the zinc. The battery should now be placed in the position which it is to permanently occupy, unless this has been already done. After the connections are made, and everything in readiness, about three quarters of a pound of sulphate of copper, in lumps of the

size of a hickory nut or larger, is dropped in, taking care that it does not lodge upon the zinc. The solution of sulphate of copper, being of greater specific gravity, will remain at the bottom of the jar. The battery, after it is set up, should be kept on a closed circuit for about twelve hours, when its resistance will have become reduced so that the force will be available. As the battery continues in action the sulphate of copper solution gradually becomes weaker and the zinc solution stronger. It is therefore necessary, from time to time, to add crystals of sulphate of copper, and to remove a portion of the zinc solution and replace it by water. A good practical rule for maintaining this battery is to always see that the stratum of liquid around and in contact with the copper is kept of a blue color. The formation of transparent crystals upon the zinc indicates that the point of saturation of the zinc solution has been reached, and that it should be diluted with water. A Baumé hydrometer is very convenient for determining the density of the zinc solution. The latter should be maintained at from 20° to 30° in a main battery, and from 15° to 25° in a local.

"It often occurs, in using this battery, that stalactites of copper attach themselves to the lower edge of the zinc and hang suspended in the solution, slowly but constantly increasing in length. These are first produced by a deposit of copper upon the zinc, which sets up a local action, followed by a rapid decomposition of the solution and a further deposit of copper. These should be removed by means of a bent wire, and allowed to fall to the bottom of the jar, as they occasion a useless expenditure of sulphate.

"Absolute quietude is essential to the proper performance of this battery. A slight jar will cause the solutions to mingle, and this effect will be followed by a rapid deposition of metallic copper upon the zinc. When the zincs are removed for cleansing care must be taken not to agitate the solution.

"Professor Hough, of the Dudley Observatory, has suggested the use of sheet lead in the place of the copper spiral, as it is cheaper and more readily cut and formed into proper shape. There is no perceptible difference in the electro-motive force, or in the resistance of the battery, when lead plates are substituted for copper in this way.

"The electro-motive force of the gravity battery is the same as the Daniell, and the average resistance, when in good working condition, about three units."

A Farewell to Mr. L. G. Tillotson.

OUR esteemed friend, Mr. LUTHER G. TILLOTSON, sails for Europe to-day in the steamship Spain, of the National Line. He will be absent for some months. He is accompanied by his wife, and their multitude of friends wish them a safe and pleasant trip, and will be rejoiced to welcome their return in health and safety.

A farewell banquet was given to Mr. TILLOTSON by his friends at the St. Nicholas Hotel on Thursday evening last, which was numerously attended, and at which Mr. TILLOTSON was overwhelmed with the good wishes and compliments of his friends and associates. We shall give a fuller account of this demonstration of good feeling and good will in our next issue of THE TELEGRAPHER. The festivities were kept up for several hours, and speeches, sentiments and complimentary toasts enlivened the proceedings to the close.

Telegraph Poles.

It is becoming a matter of some difficulty in telegraph construction to obtain readily a supply of suitable poles, and therefore the advertisement of Mr. R. S. WHITCOMB, of Chicago, which appears in this paper, will prove of interest to those who are engaged in telegraph construction. Mr. WHITCOMB has constantly on hand a supply of poles of any desired length or size, and orders sent to him will be promptly filled at reasonable prices, and satisfaction guaranteed. He is also prepared to make contracts with telegraph companies to supply large numbers of poles on favorable terms.

Humors of the Telegraph.

A DAY or two since a man, not over and above familiar with the dark ways of telegraphing, went into one of the offices in Oswego with a despatch, which he insisted upon having sent off immediately. The operator accommodated him, and then hung the despatch on a hook. The man hung around some time, evidently unsatisfied. At last his patience was exhausted, and he belched out, "Ain't you going to send that despatch?" The operator politely informed him that he had sent it. "No yer ain't," replied the indignant man; "there it is now, on that hook."

A CONTRIVANCE has been placed in engine house No. 7, Jersey City, by which the hammer attached to the bell, on first rising to strike the alarm of fire, unfastens the horses in all the stalls, and turns on the gas throughout the building. The horses have been trained so that upon the loosening of their halters they immediately leave their stalls and take their positions at the engine.

16,000 MILES
OF
"JOHNSON'S" WIRE
USED BY THE
TELEGRAPHS OF THE UNITED STATES
DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
MANCHESTER, ENGLAND.

Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

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Sole Agents for "Johnson's" Wire.

" " " American Compound Wire.
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Manufacturers of every description of

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CALLAUD BATTERY

KEPT ON HAND, AND ORDERS FILLED BY

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AND BY

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AGENTS FOR THE UNITED STATES,
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A SOUND OPERATOR, accustomed to Train Despatching and Ticket Business, wants employment. Good references.

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Care Editor TELEGRAPHER.

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Yard and Office on FISK STREET, near TWENTY-SECOND, Chicago, Ill.

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(ESTABLISHED 1846.)

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DAY'S KERITE COVERED WIRE.

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POLICE TELEGRAPH.

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General Agent for the West and North West.

J. B. DOWELL, Richmond, Va.,

Special Agent for Virginia and North Carolina.

J. A. BRENNER, Augusta, Ga.,

Special Agent for Georgia and South Carolina.

L. M. MONROE, New Canaan, Conn.,

Special Agent for New England.

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WITH A CENTRAL OFFICE,

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AND

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Baltimore, Md.,
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Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
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Milwaukee, Wis.,

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POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

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RELIABILITY and

ECONOMY

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ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION OF CANADA,

CANNOT EASILY BE ESTIMATED,

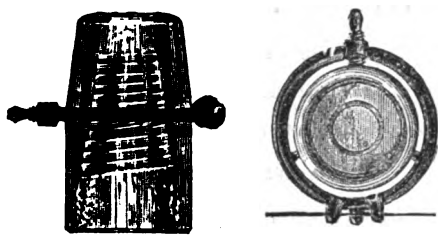
but that, in every community where it has been introduced for any considerable length of time, they have been enormous, and CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

CHESTER'S PATENT INSULATOR.



The undersigned solicit examination of some of the reasons which have induced them to recommend to their patrons and friends the Insulator exhibited above as the best and cheapest in use.

Experience has shown that pure glass is, under certain conditions, nearly a perfect insulating medium, and could these conditions be uniformly maintained for all purposes of practical telegraphing, we might rest there, satisfied that so long as the conducting wire be separated from its various points of support by a glass shield, of whatever size or shape, that there could be no escape of current from the conducting wire.

These conditions are simply that there should exist no conducting medium from the wire to its point of support *over the surface of the glass, or through fissures or imperfections.*

The conducting media, which, to a greater or less degree, are inseparable from ordinary insulators of glass, hard rubber, earthenware or porcelain, are continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire.

It is also evident that the amount of conductivity over each and every insulator, arising from these causes, is decreased by the longer distance the current must traverse these imperfect conductors between the wire and its point of support, and is increased by the increased diameter or breadth of the Insulator, as affording a greater number of these lines of conduction. When glass only is regarded, another objection also exists to great thickness, in the fact that the unequal cooling of the mass produces innumerable microscopic surface fissures, which at certain temperatures absorb moisture from capillary attraction.

Glass of ordinary surface, such as is used for ordinary Insulators, hard rubber, porcelain and earthenware, have in different degrees the capacity for receiving and retaining surface moisture in continuous lines, either from direct showers or by the condensation of moisture upon even an apparently dry day, when the thermometrical changes are such that the temperature of the Insulator is less than that of the atmosphere.

The original surface fractures alluded to in ordinary Insulators of glass are much increased, and others are produced by the necessary strains and shocks to which they are exposed during the erection of the wire and its subsequent swaying. These are the more vicious, as they are not apparent from any ordinary point of observation.

Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

In the construction of Insulators great ingenuity has been exercised to give strength, and yet elongate and narrow the lines of superficial continuity. The support of the wire has been drawn out to as great a length as is consistent with strength, and the glass has been made narrow, and Insulators thus made have proved very serviceable. It is obvious that there is a limit to this idea under old forms of construction.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal. It requires no labored description to bring out the self-evident fact. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH. The removal or substitution of an Insulator, without disturbing the conducting wire, is an incidental advantage of this construction.

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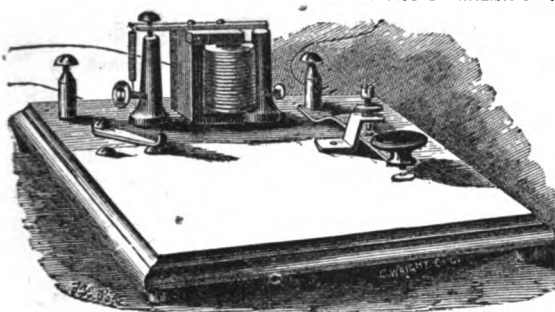
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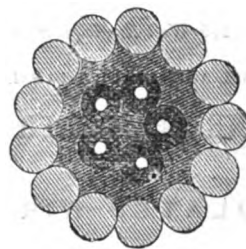
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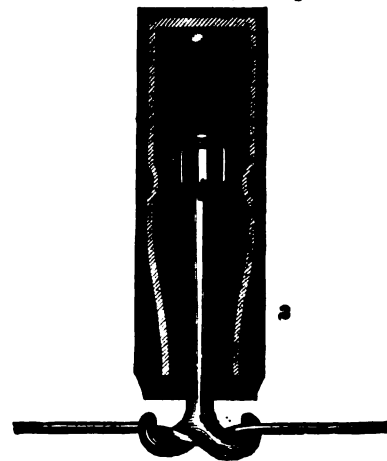
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A HAND-BOOK OF PRACTICAL TELE-
GRAPHY.
 By **R. S. CULLEY,**
 ENGINEER TO THE
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The Telegrapher

A Journal of Electrical Progress.

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Original Articles.

Induction in Overland Telegraph Lines.

By DAVID BROOKS.

(Concluded.)

THE Atlantic telegraph cables may be said to be worked *inductively*—that is, they are not worked through a metallic circuit, but by the charge of a "condensed accumulator." By this means a higher rate of speed is attained than by the ordinary Morse system—but it is stated that in working through cables, the length of which does not exceed five hundred miles, the Morse system has the greater speed or capacity.

The inducing surface is the outside metallic sheathing of the cable surrounding the conductor, and separated from it by less than one half inch. It will be seen how vastly greater is this charge than on land lines, where the inducing surface is much smaller, and at so much greater distance. Probably by the ordinary Morse system it would never manifest itself on land lines as a disturbing element, were the parallel wires kept permanently closed or open, but it will interfere with the high speed of an automatic system.

In the winter of 1856-7 I connected two wires at Pittsburg, Pa., running by different routes to Philadelphia, so as to give a metallic circuit of over seven hundred miles, and worked the circuit with the House printer. We tried this experiment several times and the result greatly perplexed me. I found that, practically, the colder the weather and the higher the insulation the less the speed at which the instrument could be worked.

In the winter of 1847-8 the United States Coast Survey, under the direction of Professor Walker, conducted a series of experiments, by telegraph, with the observatories at Hudson, Ohio, and Cincinnati, Ohio. This was before the use of repeaters. Ordinarily we could not work a circuit to Cincinnati on account of the length of the line and defective insulation, but on several occasions we worked to St. Louis in one circuit, and once to Dubuque, Iowa, a distance of eighteen hundred miles. On this occasion the mercury stood at eight degrees above zero at Pittsburg. As Professor Walker remarked, the wires were insulated by frost, and all the main batteries at Washington, D. C., Cincinnati, Louisville and St. Louis were in the circuit, and an extra battery of four hundred Grove cells, furnished by the Government, at Pittsburg. The wire used in this circuit was a plain "three-ply twisted strand" between Washington and Louisville, and a plain No. 10 the balance of the route. All the relays were in the circuit. There was but the one wire on the poles west of Philadelphia.

From the result of this and other experiments I am led to conclude that the charge induced by the earth surface would never perceptibly interfere in the working of a telegraph wire in a single circuit of even five thousand miles in length—because of its distance, say eighteen feet from the earth, and the very low specific conductivity of the earth as compared to the metals.

A very interesting experiment, having some bearing upon this subject, is made with a thousand cells of battery—one pole being connected with the earth, the other through a reflecting astatic galvanometer, and terminating at an insulator. With this wire six feet from the ground, if your hand is placed within an inch of the wire, it becomes charged inductively, and the needle is deflected. If you lower this wire so as to permit it to come within a few inches of the ground the needle is deflected from the same cause.

It has been surmised that the embarrassments experienced in working the wires to the Pacific were due to defective ground plates; but this would, least of all, be likely to be the cause, on account of the great resistance in the other portions of the circuit. We will suppose that the ground plates show a resistance of one hundred units. It would affect the working of the wires precisely as if that resistance was in the battery, and measurably show itself ten times greater in a circuit of a hundred miles than in one of a thousand miles.

It has also been suggested that changing the ground plates from iron to copper would help matters, but it would not reduce the resistance in the circuits the thousandth part of a unit, provided the plates were of equal dimensions. A ground plate is simply a joint between

two unequal conductors. We can illustrate this by connecting a copper to an iron wire of the same conductivity, but differing in size, the iron wire being six times greater diameter than the copper wire. If the small copper section were joined to the larger iron section, end to end, five sixths of the sectional surface of the iron would be untouched by the copper, and not brought into the lines of conduction. Such joint would be defective; but if the copper were enlarged, so as to cover the entire sectional surface of the iron, then the whole section of iron is brought into lines of conduction, and the joint is not defective.

We will suppose now that it is desired to join two conductors, the relative difference in conductivity being as one to one million—there being at least that difference between the earth and iron. The iron wire must expand as it comes in contact with the earth to at least one million times its original size, or the joint is defective, but if the two ground plates are of sufficient size to each to bring in contact with the earth a surface a million times greater than the section of the iron conductors, the joints, as compared to the iron, are perfect, and the earth conductor between the two plates interposes no appreciable resistance on account of its immense sectional area.

In the first part of this article it was stated that low temperature, causing the insulation to be too high, was the chief cause of induction upon land lines. We will suppose, in a hot day in summer, the temperature of the insulators is at 100° Fahrenheit. The glass insulators will themselves conduct sufficiently to show an escape on a hundred miles of telegraph, with an ordinary relay and main battery. The relay can be adjusted so as to make dots in rapid succession with the circuit open at the other terminal, and this current from the escape is sufficient, even if every insulator is sound.

It cannot be done in cold weather, or when the temperature is below the freezing point. In the latter case one dot can be made by charge, but it is impossible to make the second dot until the circuits has been left open long enough for the charge to leak out.

With a Thompson's astatic galvanometer and a thousand cells of battery we can get a steady deflection through a single glass insulator placed in the sun's rays in summer, but when the temperature is below the freezing point we fail to get any deflection; and if the mercury be as low as 10° below zero we also fail with a hundred insulators in the circuit. From experiments of this nature we can see the effect of temperature upon glass as an insulator.

A more satisfactory experiment can be made with a fruit jar made of the same kind of glass as is used for ordinary insulators. Cover the inner and outer surface with tin foil, then charge it in the same manner as a Leyden jar, and note the time it will hold a charge under different degrees of temperature. The difference in time is a measure of its varying insulating properties, by change of temperature alone. It will be found that glass, as an insulator, is affected by our changes in climatic temperature more than two hundred fold.

Temperature alone would not produce induction were it unaccompanied by dryness of atmosphere. The aridity of the Platte Valley and the plains bordering upon the Rocky Mountains is remarkable. For months during the year everything appears to be perfectly dry or devoid of all traces of moisture. In ordinary atmosphere a glass insulator has moisture enough upon its surface, when in the shade, to carry off some current, even if this moisture is in the condition of frost. For this reason it is probable that the telegraph wires in England will never be troubled with induction, because there the atmosphere, even in clear weather, is more or less saturated with moisture.

Induction would be impossible with the Brooks insulators, for the reason that they are at least five hundred times lower in temperature in a clear cold day than the common glass insulator. They have this property, and at the same time their insulating properties are not affected by rain.

The railroad men down East are quissing a new station agent, who made a requisition for "red oil" for signal lamps.

An Illinoisian, who jocularly applied his tongue to an iron fence, is waiting for the Spring thaw.

Anglo-American Telegraph.

THE report of the directors states that the total receipts for the past year accruing to the Anglo-American Telegraph Company, including a balance of £16,044 carried over from the last account, amount to £274,731. The charges for repairing cables, with the ordinary working and other expenses and income tax, amount to £65,678—leaving a balance of £209,053. Out of this amount three interim dividends of 2 per cent. each, free of income tax, have already been paid, absorbing £96,856, and leaving a balance of £112,197. The directors have set apart the sum of £50,000 for a renewal fund, and recommend that the balance, £62,197, be appropriated to the payment of a further dividend of £3 3s. 4d. per cent., free of income tax, which, with the interim dividends already paid, will be at the rate of 10 per cent. per annum for the eleven months ending December 31st, 1871—leaving a balance of £9,156 to be carried forward to the next account. The decision of the directors, announced at the last general meeting, to relay 100 miles of 1866 cable with a heavy shore end, was successfully carried out by Captain Halpin, in the Telegraph Construction and Maintenance Company's screw steamer Scandaria, in the months of May and June last, the communication having been restored on that cable by the 4th of June, and upon the 1865 cable by the 20th June, 1871. During the operation of the £3 tariff, the adoption of which was rendered absolutely necessary by the accidents to the 1865 and 1866 cables, it was found that the basis of the tariff, which had been fixed at 30s. for ten words, to meet the competition consequent upon the laying of the French Atlantic Cable, was too low, the £3 tariff having carried much larger receipts than the tariff at 30s. It was resolved, therefore, not to revert to the 30s. tariff, but to fix the rate at £2 for 10 words for all classes of messages. The result of this change is shown by the accounts, but it is proper to remark that the average receipts consequent upon the adoption of the £2, although satisfactory, have never yet reached the average amount earned under the £3 tariff, and this fact proves beyond dispute that the complaints latterly raised in some quarters against the companies, for alleged exorbitant charges, were both unjust and unreasonable, as it is quite clear that the directors of undertakings of an exceptionally novel and precarious character cannot sacrifice the interest of the proprietors, for whom they are trustees, by adopting rates other than those which have been found by experience to return a fair profit upon the capital expended.

With respect to the proposal urging the directors of Anglo and French Companies to amalgamate their undertakings, and to create a new and preferential capital for laying a fourth cable, the directors think that such an amalgamation as is proposed would not be to the interest of this company. With respect to the proposition made to the Anglo and French Companies to create a new and preferential capital, for the purpose of laying a fourth cable, the report states: "The three cables of the Anglo and French Companies are more than sufficient in capacity to carry without delay the whole traffic between Europe and America, even if that traffic were very largely increased."

They state that a reduction of tariff beyond a certain point already ascertained does not result in an increase of receipts, but the contrary, and therefore consider it inadvisable to lay a fourth cable, which they do not in any way require, either to carry their present traffic, or to meet the exigencies of any probable increase of traffic, which, should it come, is already provided for. They argue that it would not prevent competition, as alleged, and they are therefore quite resolved (so long as the existing cables possess such an excess of carrying power) to oppose strenuously the creation of a preferential capital without seeing their way to its profitable employment. If a new cable is to be laid, they think it far better that capital for such cable should be provided by third parties. If an independent company raise capital for a fourth cable, they and not this company accept all the risks involved, which are by no means inconsiderable. The report continues: "The secretary's circular, dated the 18th January, will have already informed the proprietors that the faults reported on the 10th of that month have been found to be in the land cables on the Irish side, and consequently that the condition of both the deep sea cables remains unimpaired. The directors have issued the whole of the

stock authorized by the extraordinary general meeting, held on the 31st January and 1st February, 1870, for the redemption of bonds of the Atlantic Company, viz., £100,000. Of this amount £20,300 was issued at par to the shareholders who accepted the terms offered in the circular of the 1st of August, 1871, for converting their bonds into stock. The remainder was sold at an average net premium of £11 1s. 7d. per cent., which has enabled the directors to pay off a further amount of bonds to the extent of £27,400, and to provide funds for the redemption of the balance, amounting to £52,300, as they fall due. By this transaction the whole debt of the company has been practically extinguished. In accordance with the articles of the association two directors of the company, Sir Daniel Gooch, Bart., M. P., and Mr. Cyrus W. Field, retire at this meeting by rotation, but, being eligible, offer themselves for re-election."

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Congress and the Telegraph.

WASHINGTON, D. C., February 20.

TO THE EDITOR OF THE TELEGRAPHER.

CONGRESS is sadly deficient at this session in furnishing interesting material for the letters of your correspondent. Telegraph matters appear to possess but little interest for either House, and but little is said and nothing done which, even by the most skilful handling, can be manipulated into matters of interest to your readers.

Since my last communication was written there has but little of interest taken place in connection with telegraph matters, except the speech of Mr. Palmer in the House on Saturday last in favor of the Hubbard scheme. There were but few persons present, as the House met only for debate, as in committee of the whole. Mr. Palmer attempted to reply to Mr. Beck's argument against a Government control of the telegraph, but did not succeed in repairing the breach which had been made in the Government telegraph ranks by that most able and exhaustive speech. He did not succeed in adducing any new argument in favor of the scheme. His principle argument in favor of a Government telegraph monopoly was that the telegraph is too potent an agent to be left in private hands, and that, as an agent of commerce, it ought to be controlled by the general Government. Precisely the same argument may be made with equal force and effect for a Government control of the railroads and expresses of the country.

In the Senate, to-day, Mr. Conkling presented a remonstrance of the Western Union Telegraph Company against the postal telegraph bill (the Hubbard scheme), which was ordered printed. In presenting the protest Senator Conkling said that he would hereafter show that the postal telegraph scheme was unwise and inopportune. This protest is a very powerful arraignment of the Hubbard scheme, and one which cannot fail to have an important influence in the future consideration of the postal telegraph question. As its importance will no doubt insure its publication in your columns in full, I will not extend this letter by a synopsis of it.

Both Houses of Congress are too much engaged in making capital for the impending Presidential election to devote much time to anything else, consequently most of the telegraph lobbyists and schemers have abandoned the field for the present at least.

The Western Union Company are now squarely against the Hubbard or any other Government telegraph scheme, and whenever there is any serious movement, will not fail to be represented here in opposition to it. Of private telegraph projects we hear very little, and there is not much probability of any of those which have been presented getting through.

CAPITOL.

The American System of Train Despatching Safe and Reliable.

OUT WEST, Feb. 17.

TO THE EDITOR OF THE TELEGRAPHER.

I WAS pleased to see, under your editorial head, in THE TELEGRAPHER of February 3d, an article referring to the present system of train despatching, and commenting on the article from the *Railroad Gazette*. With railroad accidents occurring all around us as frequently as they have in the past month, it is well to hear the answer of those practically engaged in the business to the question, "Is the American system of train despatching an unsafe one?" I say most decidedly it is not—but in the hands of competent employes is perfectly safe. I have yet to hear of an accident, where the system was properly carried out, that could be charged in any way against the system. You have already in your paper, some time since, given a description of the manner in which trains are moved by telegraph, but if not taking up too much of your space I would repeat it, and ask any one to show wherein lies the insecurity from accident. An order is first sent to the conductor and engineer of the train having the right

to the track to hold at a certain station till the train from the opposite direction arrives there, and the conductor and engineer are required to reply to this order, saying how they understand it, and cannot leave until they get a second message from the train despatcher, saying their understanding of the order is correct. Then and not till then an order is sent to the other train to come on, and this order is also treated in the same way. Can anything but wilful neglect of orders bring those trains into collision? "A Hindoo" affirms that the system "is unsafe, unreliable, and that it does not within itself provide any check." His bare affirmation will not go for much in the face of the fact that thousands of miles of road and thousands of trains are daily moved and despatched by this very "unsafe" system, and yet no accident occurs from it. Of course the system "has no check in itself" on drunken or inefficient employes, or broken rails, land slides, snow drifts, etc., but these are matters entirely out of the jurisdiction of the "system," and ought not to be laid to its charge. In conclusion I have only to say, give me a good working line (compound wire and Brooks insulators) and a set of faithful, steady employes, and I am willing to risk my head on any accident that may occur from despatching—and this not from any confidence in myself as a despatcher, but from my perfect confidence in the safety of the system. I hope we may hear from other despatchers soon. GRAND TRUNK.

Encouraging Indications for the Future.

TO THE EDITOR OF THE TELEGRAPHER.

WITHOUT a ruffle on the surface to indicate the fact, it seems to me the current has silently set in towards that object for which we have hoped against reason; and this object is the "new era" spoken of in the *Journal of the Telegraph*. I say "against reason," because we have expected to reap good fruits after sowing, as a body, largely of tares.

I ask every man, individually—Have you not hoped for good results while you have known your line of conduct has not been drawn and followed in accordance with your idea of the best interests of the company?

I cite late numbers of the *Journal of the Telegraph* in support of the opinion expressed at the beginning of this article. That paper not only recognizes the "new era" as "dawning," but finds itself the chronicle of certain acts on the part of the highest officers of the company, the like of which I do not remember to have occurred in ten years. All can read of and judge for themselves those acts. Now we all know that the outward manifestations are the expression of inward sentiment; and some will excuse me if I reason that any proofs found in the official organ of the company which tend to show a turning towards a policy of encouragement, such proofs may be considered sound; and why so? Because it is a universal trait of human nature—quick to blame and correct; slow to approve and reward. But more than this, and still as truly—it is human practice to disguise, cover up, or cloak its good acts, lest the object mistake its import, and, like a spirited horse, dashes off at the slackening of the strain upon his bit, while his driver meant to give him rest and comfort, and acted from affection. Please make the distinction between pharasaical "good acts" and good acts done from a conviction and love of the truth that the good in an act is in proportion to the love of good for its own sake.

And, let me say to those who clamor for justice, that if it were strictly dealt out to us some few would be bettered, while most would be glad to return to the injustice which now, they claim, prevails.

Too Many Operators Taught.

FARIBAULT, MINN., February 16.

TO THE EDITOR OF THE TELEGRAPHER.

WHEN I see what a miserable business telegraphing is getting to be I can hardly contain myself; yet it is all our own fault.

At almost every telegraph office throughout the United States we see several students learning. They are taught by sound, and most of them for nothing, or about that. Now, friends, don't you see and don't you know that every man you teach reduces your own pay and endangers your own position? There are instances every day in which the student beats his teacher out of his position by one way or another. Can't you see that, at the present rate we are turning out operators, in less than five years it will be impossible to sustain life by this miserable business?

There are a number of good operators working at stations within fifty miles of me, who are only getting fifteen dollars per month and board, and that away out here in Minnesota. I have heard that in the East they not only work for nothing and pay all their own expenses, but actually give their officers presents.

Now, if the operators would league themselves together not to teach anybody, for any consideration, it is my candid opinion that this move would raise our salaries fifty per cent. in less than a year. The great tendency of the times is to leave the hard mechanical vocations and pursue lighter and easier callings, so that telegraphing, more than ever, is being crowded to overflowing.

I wish I could reach every operator in our Union and beseech him not to take a student if he values his position.

AN OLD SOUNDER.

Setting up Local Batteries.

PLEASANT HILL, MO., Feb. 14.

TO THE EDITOR OF THE TELEGRAPHER.

In setting up a local battery after cleaning I have found the following a good plan:

Instead of returning one third of the old solution to the porous cup (as generally done) fill the porous cup to within an inch of the top with soft water; place it in the jar and connect the wires. If the sounder does not work, pour in the old solution slowly until it does work. If two jars are used together prime each one separately.

By this plan the precise quantity of old solution required is added, neither more nor less. Sometimes the old solution will not be required, and often only a few drops. If the porous cups are not full enough after priming, fill them up with soft water.

R. J. H.

Answer to Correspondent.

U. S.—The National Telegraphic Union is not now in existence.

Personals.

Mr. S. K. TAFT, of the D. & M. R. R. night force at Pontiac, Mich., has been transferred to the day office at Owosso, Mich., on the same road.

Mr. C. CHAPMAN has accepted the day office at Davisburgh, Mich., on the D. and M. R. R., vice C. G. CAVANAUGH, resigned.

The Telegraph.

By Cable.

THE PORTO RICO CABLE REPAIRED.

KINGSTON, JAMAICA, Feb. 14.—The Porto Rico telegraph cable has been repaired, and the tests show it to be now in perfect condition. It had been broken off Porto Rico in shoal water by a ship which was drifting in a hurricane, and also at Holland Bay by a wrecked vessel.

The cable steamer Dacia will proceed to recover and complete the laying of the Aspinwall cable after coaling at Kingston; and the International will proceed to repair the St. Kitts cable, also broken in shallow water by a vessel in a hurricane.

All connected with the expedition were in good health, and much pleased at the prospect of a speedy and successful completion of their labors.

TOLLS ON ATLANTIC CABLE MESSAGES.

LONDON, Feb. 16.—At a general meeting of the Anglo-American Telegraph Company this evening the reduction of the present rate of tolls on cable despatches was favorably considered. The advisability of laying a fourth cable across the Atlantic was urged, and the proposal was well received.

TELEGRAPHIC COMMUNICATION WITH ST. THOMAS RESTORED.

HAVANA, Feb. 17.—The telegraph cable is now working through to St. Thomas and the islands beyond, and no further interruption of telegraphic communication is anticipated.

MAGNANIMOUS DEVOTION TO THE PUBLIC INTERESTS.

LONDON, Feb. 19.—It is reported that Bischofsheim, who has charge of the projected new cable to New York, has refused overtures from the Anglo-American Company looking to the amalgamation of the new enterprise with the present cable combination, on the ground that "such action would lead to a continuance of the present exorbitant cable tariffs and mismanagement of the business, and that this would be to defeat one of the ends for which the subscriptions of stock were made."

SPECULATION ON POSSIBLE CABLES.

LONDON, Feb. 20.—The London *Times*, in its city article this morning, says the companies operating the existing cables between Europe and America have agreed upon a basis whereby the French company will proceed to lay another cable.

The article hints that a modification of the present tariff upon cable despatches may be expected.

The Philadelphia, Reading and Pottsville Telegraph Co.

WE are under obligations to Superintendent C. T. Sellers for a copy of the annual report of the above company for the year ending November 30, 1871.

The receipts during last year have been less than those of the previous year, owing principally to the long strike in the coal regions of Pennsylvania, in consequence of which, during four months of the year, there was but little business done; but partly also to competition and low rates. During the winter of 1870 the Western Union Company extended their wires to the principal points in the Schuylkill coal regions, and the rates were reduced from 35 and 2 to 20 and 2. Considering the dulness of the trade for a portion of the

year, in addition to competition and the large reduction of rates, the business of the company has been better than was anticipated. During the last two years a large number of poles and several wires have been renewed, and with the exception of about thirty miles of poles, the lines of the company are all in good condition.

The report contains the following statement for the financial years ending November 30th, 1870, and November 30th, 1871:

Miles of poles, Nov. 30, 1870.....	505	Nov. 30, 1871.....	572
" wires.....	926	" ".....	1,125
No. of stations.....	115	" ".....	176
" instruments in use.....	238	" ".....	323
Receipts.....	\$43,566 56	" ".....	\$35,124 87
Expenses.....	\$0,718 34	" ".....	\$2,774 38
Cost of renewing poles and wire.....	12,212 52	" ".....	4,560 34

A New Electro-Automatic Apparatus in Spain.

THE members of the telegraph staff, D. Enrique Iturriaga and D. Vicente Villareal, have invented an electro-automatic telegraph apparatus, which, according to the opinion of competent persons, who have seen it work in the central station, is destined to bring about a revolution in the telegraph world. The commission appointed by the Post and Telegraph Director-General for the examination of the apparatus, have made a report highly gratifying to the inventors; the minister of that particular branch has been informed of the importance of the matter, and also of the scanty resources of the telegraph clerks, preventing them from carrying out the project. The minister, in consequence, has had the necessary means placed at their disposal, so that Spain may not lose the honor of having inaugurated a useful reform in the transmission of communications.

A New York Assemblyman after the Western Union Telegraph Company.

ON Saturday last, in the State Assembly, Mr. Chambers offered the following:

"Resolved, That the Judiciary Committee of this House be directed, while in the City of New York examining the charges in relation to the courts of that city, to examine into the affairs of the Western Union Telegraph Company, and to inform themselves and report to this body whether that company has been using any of its funds to purchase stock of the said company, and if so, to what extent, when, and what price; and also whether said company has incurred any debts or liabilities, and if so, to whom and to what amount, and whether such action is not in violation of the law; and said committee, for the purpose of examining the affairs of said company, may send for persons and papers."

Objected to by Mr. Foley, and the resolution was returned.

Foreign Telegraphic Notes.

A MEMORIAL has been addressed to Mr. Gladstone by the Society of Arts, in which attention is drawn to the importance of placing the submarine as well as the internal system of telegraphy under the control of the British Government. It is urged, on several grounds, that the executive should take measures to complete, without delay, a proper external as well as internal system of public postal telegraphy, by the acquisition, on recognised terms of compulsory purchase, of all the existing submarine lines of cable, and consolidating the same with the general postal system of this country.

It is announced that the land line of telegraph between Yeddo and the North, in Japan, will be commenced forthwith. There will be a cable laid across the Straits to Hakodadi; it is believed that within the next fifteen months Hakodadi, Yeddo, Yokohama, Kobe and Nagasaki, and several intermediate places, will be in telegraphic communication.

Humors of the Telegraph.

A DAY or two since a man, not over and above familiar with the dark ways of telegraphing, went into one of the offices in this city with a despatch, which he insisted upon having sent off immediately. The operator accommodated him, and then hung the despatch on a hook. The man hung around some time, evidently unsatisfied; at last his patience was exhausted, and he belched out: "Ain't you going to send that despatch?" The operator politely informed him that he had sent it. "No yer ain't," replied the indignant man; "there it is now on the hook."—*Bangor Commercial*.

The following, from a San Francisco newspaper, will be enjoyed by the telegraphic fraternity:

"A popular phrase in a play is full of infection; the boys in the gallery catch at it eagerly; the occupants of the boxes repeat it unconsciously; the actors on the stage utter it *otto voce*, and even the assistants in the busiest scene delight in making 'sweet music to the ear' by producing the magic sounds. Sometimes the contagion is carried further. In the play now running at the California Theatre, where the phrase, 'K-n-o-o-k me down,' is uttered with so much unction by Mr. Williamson, there is a telegraph scene in the last act—the wires have been severed by the Indians, who threaten the railroad station on the Union Pacific Railroad—the

station master is also the telegraph operator, who finds himself in a dilemma, and wishes to communicate with the next station to send back the train due there with a company of soldiers on board—he attaches the severed wire to the instrument and establishes the connection in presence of the audience—then clicks out to station 48: 'Indians surround this station—has the train with troops passed?' With breathless anxiety the audience wait the reply—it does not come; the station master is almost in despair—finally, 'Click, click,' is heard; he turns eagerly and spells out the answer: 'The train—is—just—entering—the—station!' The audience applaud frantically, and he falls on his knees to utter his heartfelt ejaculations for the relief, complimenting the instrument by saying, 'My pretty little piano, that is the sweetest tune you have ever played.' But it don't play that tune at all; the operator representing station 48, standing behind the scenes, has caught the infection from hearing everybody repeat the popular phrase, and instead of saying 'The train is just entering the station,' he simply clicks out, 'Oh, k n-o-o-k me down!' But the sounds are the same to the audience, and they accept the hero's interpretation with as much satisfaction as if the right words had been spelled out. A little laugh, almost drowned by the general applause, shows that there is one telegrapher in the audience who catches the joke, and thinks it too good to keep out of print."

Banquet and Presentation to Mr. L. G. Tillotson.

WE last week referred briefly to the complimentary banquet tendered to Mr. LUTHER G. TILLOTSON by his personal and business friends, upon the occasion of his impending departure for Europe. This banquet took place on Thursday evening of last week at the St. Nicholas Hotel, and was a very pleasant and successful affair.

The guest of the evening, by his social characteristic, and by years of honorable and liberal business life, has endeared himself to a large circle of friends and acquaintances, and it was deemed appropriate that the occasion of his leaving his native shores, for several months of travel and observation in Europe, should be improved to manifest to him the esteem and affection entertained for him. A large number of his friends accordingly assembled at the St. Nicholas on Thursday evening, and about nine o'clock were invited to the dining room, where a profuse and elegant banquet had been prepared in the superior style for which that hotel is celebrated.

After the guests had assembled around the tables Mr. TILLOTSON was escorted into the dining room, and was greeted with prolonged and enthusiastic cheers, and took his seat beside the chairman, Mr. H. F. SWEETSER, at the head of the table. After due attention had been paid to the substantial, the more important business of the evening commenced.

In response to a complimentary toast Mr. TILLOTSON briefly responded, returning thanks for the honor which had been done him on this occasion, and referred to the pleasure which the recollection of the events of this evening would give him during his sojourn in foreign lands, and as long as life should last.

Subsequently brief and appropriate speeches were made by Messrs. SWEETSER, PETERS, of the *Brooklyn Times*; ASHLEY, of THE TELEGRAPHER; WYMAN, CORNELL, GLEN, of the *New York Herald*; FORNEY, of the *Railroad Gazette*; GREELEY and others, to which our limited space will only admit of this brief reference.

Mr. TILLOTSON was very much affected at the display of the affection and esteem in which he is held by his friends and acquaintances, and was at times almost overcome at the compliments paid to him by the several speakers.

The speeches were all brief and appropriate—none of the speakers subjecting the company to an infliction, too common in after dinner speeches, of prolonging their remarks to an unreasonable length.

At about one o'clock the affair terminated and the company dispersed, after cordially taking the guest of the evening by the hand and wishing him a pleasant and prosperous journey, and safe return to home and friends.

Messrs. H. F. SWEETSER, N. O. PARKS and E. S. GREELEY were the Committee of Arrangements, and were assiduous throughout the evening in their efforts to promote the comfort and enjoyment of the company. So well did they discharge their manifold and arduous duties that it was the sentiment generally expressed of those present that on future occasions of the kind their services in a similar capacity were eminently desirable.

On Saturday morning there was quite an assemblage of friends on board the steamship Spain, to bid Mr. TILLOTSON and his wife, who accompanies him on the trip, good bye. While engaged in completing his arrangements for the trip, and taking leave of his friends, a delegation from the manufactory of L. G. TILLOTSON & Co., headed by Messrs. E. M. PIERSON, superintendent, and W. H. MARKLAND, foreman, made their appearance, and requested an audience with him in the saloon of the steamship. Upon proceeding thither Mr. TILLOTSON was surrounded by his employes and friends, and the Editor of THE TELEGRAPHER was requested to present him with a token of the esteem and regard in which he was held by his employes at the "shop." This he did, briefly expressing the good feeling and good wishes of the employes, and their appreciation of the kind feeling and interest which he had always taken in them, and the consideration and liberal treatment which they had experienced from him. He then, on their behalf, asked his acceptance of a very handsome and valuable gold headed cane.

The cane bore the inscription, elegantly engraved upon it:

Presented to
LUTHER G. TILLOTSON
By employes at Factory,
Feb. 17, 1872.

Mr. TILLOTSON was very much affected at this evidence of the good feeling and regard entertained for him by his employes, who, as is too seldom the case in similar relations, were also his friends. It was some little time before he could sufficiently command his feelings to respond. He returned his thanks for their beautiful gift, which he should treasure as among his choicest possessions, and which, while in foreign lands, would be an ever present reminder of the good friends he left behind in his employes, all of whom he hoped to find enjoying health, happiness and prosperity on his return.

Subsequently Mr. PIERSON, on behalf of the employes, requested Mrs. TILLOTSON's acceptance of a very beautiful gold ring, as a token of their esteem and regard for her. Although very much surprised at this unexpected token, she gracefully accepted it with her sincere thanks for the honor, and said she would wear it with pride and pleasure.

The time having arrived for the sailing of the steamship, the visitors reluctantly left the decks, and in a few moments the vessel started on her long journey.

New Patents.

For the week ending February 13, 1872, and bearing that date.

No. 133,711.—ELECTROAL CIRCUIT FOR THE CHEMICAL TELEGRAPH. George Little, Butherford Park, N. Y.

1.—The adjustable rheostat, applied in a circuit between the main line and the earth, in combination with a receiving telegraph instrument, to regulate the proportion of current passing to the said instrument, substantially as set forth.

2. A resistance to regulate the entire proportion of electricity passing over a branch circuit to the earth, in combination with an adjustable rheostat and receiving telegraph instrument, substantially as set forth.

3. A wedge circuit closer and flexible conductor, in combination with an adjustable rheostat and receiving telegraph instrument, substantially as set forth.

4. A transmitting instrument connected to a main line, substantially as specified, so that the current is subdivided, passing in two opposite directions on the main line to two or more distant receiving stations.

5. Two circuits, each provided with a receiving telegraph instrument connected to an adjustable rheostat, substantially as and for the purposes specified.

Recent British Patent.

No. 1,657.—W. A. Lytle, The Grove, Hammersmith, Middlesex. IMPROVEMENTS IN TELEGRAPHIC SIGNALING APPARATUS.—Dated June 24, 1871.

1. The production of sound for signaling purposes, by causing the needle or lever of a telegraphic instrument to strike against one or two strings, strained upon a resonant case. 2. The application of this principle to a single needle. 3. The correction of causes of disturbances in the signals by means of permanent magnets.

Born.

NYE.—At La Crosse, Wisconsin, Feb. 12th, 1872, to J. M. NYE, superintendent of the Southern Minnesota Telegraph Company, a daughter.

Married.

DAVIS—LANE.—At Lawrence, Kansas, on the 17th inst., by the Rev. F. M. Ellis, Mr. JON A. DAVIS, telegraph operator in the General Superintendent's office of the L. L. and G. R. R., to Miss Maria T. Lane, all of that city.

Died.

AMMOTT.—At five o'clock Monday morning, Feb. 19th, at the Union League Club, of this city, F. GEORGE AMMOTT, after an illness of seven weeks, of pneumonia, aged twenty years, three months, nineteen days.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS
OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, FEBRUARY 24, 1872.

A Useful Publication.

In our last issue we noticed a new publication printed for the Post-office authorities in Great Britain, entitled "The Post-office Code Book," which contains a list of all the telegraphic stations in the United Kingdom, as also a statement of the hours during which the offices are open for business, a list of money order offices, etc., with other information which is of interest and importance. This book is primarily for the guidance and instruction of the telegraph clerks and officials, but, it is understood, will also be printed soon for the use of the public.

Such a publication cannot but be of great interest and importance to all who have frequent occasion to use telegraphic facilities, and a similar publication in this country could not fail to supply a public want and to meet with general acceptance. At present persons having occasion to use the telegraph are embarrassed by the lack of the information which is absolutely necessary to enable them to proceed intelligently in forwarding or replying to telegraphic communications. This embarrassment cannot always be relieved, even upon application at telegraph offices, except at principal offices and upon main routes. There is the more necessity for such a work here than in Great Britain, owing to the number of different companies operating lines, and the complicated and varying tariffs to different localities.

It is true that the lines being under one management, and the tariff uniform in Great Britain, facilitates the compilation of such a work, but it ought not to be a task of very great magnitude to prepare a similar work in this country. As its publication could not but prove a benefit to the telegraph companies, it is but reasonable to suppose that they would promptly and with pleasure furnish the necessary information. If no person can be found to undertake the compilation of a book which shall cover all the telegraph lines and offices, we would suggest to the managers of the several companies that each have it compiled for their own lines and furnished to their customers. It would be the best possible advertisement for any company that should supply its customers, actual and possible, with such information, periodically corrected and brought down to the date of publication. To this essential information might be added statistics, maps of telegraph lines, and other telegraphic information of interest, which would add to the value and importance of the work, and if undertaken as a private enterprise, would add largely to the popular demand for it.

We have long thought that there was too little disposition on the part of telegraph managers in this country to make public facts and statistics, which are essential in giving a comprehensive and correct idea of telegraphic progress and business from time to time. It is almost impossible at present to ascertain, with any degree of accuracy, the number of messages transmitted within any given period, the number of new offices, the additions and extensions to the telegraphic system, etc., all of which in every other country are matters of constant and permanent record. Much of this difficulty doubtless arises from the active competition between rival companies, who desire to conceal from each other, and sometimes from their stockholders, the actual facts in regard to their business and prospects. It is one of the strongest arguments in favor of a monopoly of the telegraph business, whether public or private, that it brings the whole telegraph system under one control and management, and simplifies, and, if properly administered, economizes the working of the telegraphs of the country. That there is much force in this argument cannot be denied. We consider, however, the evils unavoidably consequent upon such a monopoly as greatly counterbalancing its advantages, and therefore we oppose it. Some of these advantages, such as the

collection and preservation of the information and statistics before referred to, may be secured, even with competition, by reasonable and sensible action on the part of the managers of telegraph organization. Omitting this, however, we can see no reason why such a work as that which has just appeared in Great Britain may not be compiled and published here; and, if undertaken as a private enterprise, we believe that the demand for and sales of the book would amply compensate the compiler and the publisher. Who will undertake the task, and will our telegraph managers coöperate with any proper person who may undertake it, to make the record full, accurate and reliable?

Mr. Scudamore's Telegraphic Censorship Condemned by his Superiors.

THE indignation which the arbitrary and illegal censorship established by Mr. SCUDAMORE over telegraphic correspondence by the postal telegraph lines in Great Britain had caused, has at last led his immediate superior, the Postmaster-General, to repudiate and condemn the indiscretion of which his subordinate had been guilty. We copy from *The Mechanics' Magazine*, of London, the following statement, which, to say the least, puts the case very mildly:

"The Postmaster-General has condemned Mr. Scudamore's over-vigorous action in the matter of delaying private telegrams. There has been some confusion in this case between the powers of the post-office and that of the home office, and Mr. Graves has argued that the Postmaster-General ought to have the same rights as regards telegrams that the Home Secretary has as regards letters. But all necessary rights of this kind are already vested in the Home Secretary, as the minister specially charged with the maintenance of public order. Any letters or telegrams by which, in the opinion of the Government, this would be seriously threatened, would at once be stopped. What the Postmaster-General is charged with is the transmission and delivery of such written or telegraphed communications as the public choose to intrust to him. In Mr. Scudamore's case there was the further irregularity that this kind of power was assumed, not by the minister, who can be called to account in Parliament, but by the chief of the permanent staff."

Coupled with the promotion which Mr. SCUDAMORE has received since the exercise of his illegal and criminal censorship, this condemnation may be interpreted thus: "There is such an outcry about this matter, and it is having such a damaging effect upon the question of postal telegraphs abroad, that we must give you a mild blowing up, or Parliament will be making trouble; but we will precede this *pro forma* disavowal of your acts by your promotion, which will satisfy you that the disavowal is only Pickwickian, and that we are very glad, as a matter of fact, that you did snub the telegraph correspondents of the press, whose enterprise was likely to prove troublesome to us and beneficial to the telegraphers, who so unreasonably objected to discharge and starvation for daring to organize to secure the fulfilment of the promises that had been made to them in good faith, but which it was inconvenient to carry out!"

Comment on the above is unnecessary, and we will merely commend it to the attention of those who are seeking to impose upon this country a bad imitation of the British postal telegraph system.

Retirement of Mr. J. D. Reid from Editorial Duties.

Mr. J. D. REID, the editor of the *Journal of the Telegraph*, the official organ of the Western Union Telegraph Company, has resigned his position with that company, and, after the issue of the number for March 15th next, will retire from editorial duties altogether.

We congratulate Mr. REID on his relief from what must have been a thankless and uncongenial task. Hampered and restricted as the editor of the organ of a corporation like the Western Union must be, under the most favorable circumstances, the position cannot be an agreeable one. Obligated to defend, and more often obliged to keep silence when he feels it to be almost a duty to speak, he can neither give satisfaction to his principals or to himself. We believe that Mr. REID has sought conscientiously to do his duty in the position in which he was placed, and know that he rejoices at his approaching relief, and at engaging in more congenial and agreeable employment and duties.

As the editor of the official organ of a company which at times, through some of its officials, has been prominently and ridiculously officious in efforts to de-

stroy THE TELEGRAPHER and injure its editor and publisher, we have sometimes had occasion to criticise our contemporary somewhat harshly, but in this there has never been the slightest ill feeling towards him personally. We have been friends—and if, in the heat of journalistic strife, we have ever written anything which may have been construed as personally unkind towards Mr. REID, we now take occasion to disavow any such purpose or intention.

In his retirement from journalistic labor he has the best wishes of the publisher and editors of this paper for his future prosperity and happiness, and we hope that hereafter his path may be made pleasant and his duties such as shall bring with them a reward in their performance.

We are not advised who Mr. REID's successor in the editorial chair is to be, but, whoever may be assigned to that duty, he may learn from his predecessor's experience that he has no easy or pleasant task before him.

An Excellent Appointment in the Patent Office.

Mr. Z. F. WILBER has been appointed examiner of the Patent Office, in the department of the electrical and telegraphic apparatus, which is included in the class with chemical apparatus and processes under the charge of Chief Examiner B. S. HEDRICK. Mr. WILBER comes from another department of the Patent Office, and, we are gratified to learn, is a gentleman of ability and industry, and we have no doubt will soon render himself familiar with this intricate and important field of invention, which, just at present, is being most assiduously cultivated. Although not personally acquainted with Mr. WILBER, we are informed that he is the right man in the right place, and a worthy successor to Mr. HAYES, whose retirement from the office we recently had occasion to chronicle.

Compliment to Supt. Lamb.

Mr. FRANK H. LAMB, who has been for a number of years Superintendent of the Western Union Telegraph lines in British Columbia, having recently resigned his position, the operators in his employ took occasion to express their esteem and friendship for him by presenting him with an elegantly finished gold-headed rose wood cane.

The presentation was made by Miss SARAH A. MACLURE, on behalf of her associates, and was accompanied by an appropriate letter, signed by all the operators, to which Mr. LAMB made a felicitous response.

Any one who knows our friend LAMB will not accuse us of conventional and unmeaning compliment when we say that no telegraph official ever existed who was better calculated to win the confidence, friendship and good wishes of his employés, or who more eminently deserved a testimonial at their hands.

A SPIRAL LEYDEN JAR.—Mr. Frederick Guthrie, in a note to the *Philosophical Magazine* (London), thus describes its construction: "A strip of tin foil four feet long and eight inches wide is placed upon a strip of vulcanized caoutchouc four feet long and one foot wide, in such a way that along both sides there is a margin of two inches of caoutchouc, and at the left a margin of four inches of tin foil. A second piece of caoutchouc, exactly similar to the first, is placed exactly over the first upon the foil. A second piece of tin foil, of the same width as the first, but four inches shorter, is placed on the second caoutchouc above the first foil, with its right hand end above the right end of the first foil. Its left end, of course, falls four inches short. A brass wire carrying a knob is laid across the end of the upper foil. The whole is rolled up from the right end and bound. What was the lower of the two foils projects between the two layers of caoutchouc, and may be prolonged around the circumference of the roll; it forms the outer coating or earth surface. What was the upper coating of foil now forms what corresponds to the inner coating of the ordinary jar, and is entirely covered, excepting where it is prolonged as the wire and knob at the centre of the roll. If the sheet caoutchouc be an eighth of an inch in thickness, a jar of very great electrical capacity is obtained in a very compact form, and one which is free from the risk of fracture, and is less impaired than the ordinary jar by atmospheric moisture. A very serviceable modification of this form has been constructed by using for the insulating material sheet ebonite. The ends of the spiral roll are capped with dry mahogany disks. The earth foil is connected with a brass girdle around the centre of the cylinder, and is not visible. The electric capacity is between four and five times as great as that of a glass jar of the same volume. It has been in use for several months, and appears almost incapable of injury."

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Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

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This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

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A LADY DESIRES A SITUATION AS OPERATOR in a Country Office, or on a Railroad Line Has good references.

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THIS SYSTEM OF

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WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

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Lynn, Mass.,
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New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
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Toledo, Ohio,
Toronto, Canada,
Washington, D. C.,
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The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

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These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System

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It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

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that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original FARMER & CHANNING PATENTS, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION OF CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

TELEGRAPH WIRE.

CHARLES T. CHESTER

Desires to call the attention of
Telegraph Companies and Line Builders

To a new article of

TELEGRAPH LINE WIRE

OF

Unequalled quality and uniform excellence.

While great care and attention has been given to instruments and insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European governments, only fit for fencing purposes. Many tons of such material now remain here utterly unsaleable and unfit for use.

The able men who by their researches in Electricity, have solved the problem of Telegraphy through thousands of cable miles, have not neglected the subject of aerial lines, and their labors have fixed for Europe a standard of excellence, and means for preserving it, far exceeding that with which we have been hitherto content.

We extract from the minute and specific details a few of the requirements of a

STANDARD GOVERNMENT WIRE.

1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated, as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be coiled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

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A BREAKING STRAIN OF 1,260 POUNDS

for No. 8 wire is called for, and a capability of

Twisting upon itself 18 times

without rupture in a length of six inches.

Being convinced, from a long experience in construction of lines and sale of wire, of the necessity of this rigorous and faithful system of test applied uniformly, and to every bundle of wire sold by us, we have made complete arrangements to supply, and now offer for sale

This uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market.

We shall designate it by the Trade Mark,

CHESTER, A 1,

And our customers ordering it may be sure of receiving an article always uniform and always the very best. The capacity or endurance of No. 9 is

21 to 23 twists upon itself,

in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

COMPARATIVE AND COMPETITIVE TESTS

with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 30. The omission of the elongating process would increase the flexibility and the tenacity.

Although the Wire has been

PROVED IMMENSELY SUPERIOR

to that commonly sold, its price will closely approximate to that of the inferior article.

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TELEGRAPH LINE WIRE.COPPER FOR
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The superiority of the COMPOUND TELEGRAPH WIRE, compared with iron, consists in its LIGHTNESS, reducing by over fifty per cent. the number of poles and insulators required;

Relative TENSILE STRENGTH, homogeneity and elasticity—decreasing the liability to breakage from cold weather, sleet, etc.;

CONDUCTIVITY—insuring great improvement in the working of lines in any condition of the weather;

And in its DURABILITY, which greatly exceeds that of the best galvanized iron wire;

Altogether resulting in a very great reduction in the cost of maintaining and working telegraph lines, while, at the same time, insuring

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ATTENTION, OPERATORS!

PATENTED



APRIL 4.

We would call your attention to our
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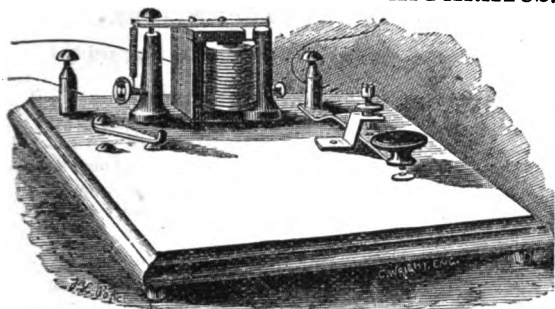
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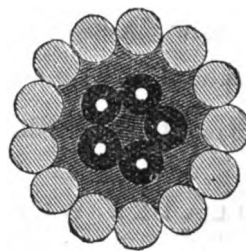
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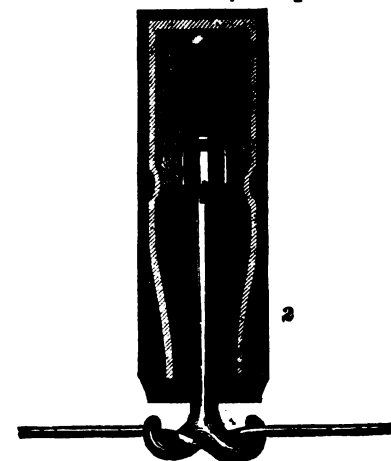
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The Telegrapher

A Journal of Electrical Progress.

Vol. VIII.—No. 28.

New York, Saturday, March 2, 1872.

Whole No. 294

Remonstrance of the Western Union Telegraph Co. against the Postal Telegraph Bill.

In the Senate on Wednesday, February 21st, Senator Conkling presented the following remonstrance of the Western Union Telegraph Company against the passage of the Postal Telegraph (Hubbard) bill, which was ordered to be printed:

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH CO.,
NEW YORK, Feb. 13, 1872.

To the Honorable the Senate of the United States.

The Western Union Telegraph Company hereby respectfully remonstrates against the passage of Senate bill No. 341, entitled "A Bill to Connect the Telegraph with the Postal Service, and to Reduce the Rates of Correspondence by Telegraph," reported by the Senate Committee on Post-offices and Post-roads (Report No. 20), January 22d, 1872.

The following are some of the objections which we urge to the bill:

First.—Although the Report truly states that "the Western Union Telegraph Company performs nine tenths of the telegraph business, and fairly represents the telegraph system of the country," this Company has not been applied to by your Committee for any information either concerning its own business or in relation to telegraphy generally; nor has it been offered an opportunity to be heard upon the subject before the Committee. On a single occasion, two years ago, the President of this Company was, on his own application, accorded a hearing before the Committee, limited to fifteen minutes.

Under these circumstances the Managers of this Company have been much surprised at the publication, in a Senate document, of statements concerning this Company which are erroneous in fact, or in the inferences to be established, and which are used to justify the very extraordinary measures embraced in this bill.

This Company is not prepared to admit that the Senate of the United States is the proper tribunal before which to try corporations created by the States, either for alleged undue expansion of capital, unreasonable charges, or inadequate facilities; but we claim that, whether the measure reported by the Committee on Post-offices and Post-roads is based upon charges against this Company, or upon alleged considerations of public policy, the dictates of justice and the practice of the Senate alike require an inquiry into the facts, and a careful investigation of the interests to be affected, before adopting legislation so important in its consequences. Representing, as this Company does in a large degree, the telegraph property, the telegraph experience and telegraph progress of the country, we claim that, in any proposed legislation affecting telegraph property and business so vitally as the provisions of this bill, we are entitled to a hearing, both as to the necessity alleged to exist for Congressional action and the effect of such action upon the private property involved.

We protest against the assumption by the Committee of the Senate, without proof, and without having been heard in our defence, that the business of the Western Union Telegraph Company is conducted in disregard of the rights of the public to such an extent as to render it necessary for Congress to intervene. We are not advised that any person has applied to the Senate for the redress of any grievance alleged against this Company. Its Managers are believed to possess the confidence of the public, and are earnestly striving to meet their wants by extending their lines into new territory, and by enlarging telegraphic facilities as rapidly as the growth of business demands. The telegraphic facilities of the United States have been increased, within less than six years past, by the construction of thirty thousand miles of line and seventy thousand miles of wire, and the opening of more than three thousand new stations. Of this development the Western Union Company has provided more than half, and has expended therefor about five million dollars in addition to the contributions of Railway Companies included in its system, which amount to two and a half million dollars more. Probably the gross expenditure for new telegraph property by all the companies in the country, including railways, has amounted to nearly or quite twelve millions of dollars within these six years.

During this period the average charge for messages has been reduced one half, and work has been in progress for some time by this Company preparatory to further reductions, which will be made at an early day.

There have been paid in dividends to stockholders in telegraph companies, during the period of this development, about five millions of dollars, or an average of less than one million a year. This would be ten per cent.—the rate contemplated by this bill—on a capital of ten millions, which is less than the sum invested during the same time in extending and improving the telegraph system, which previously represented more lines and larger revenues than those for which Great Britain recently paid more than thirty million dollars in gold. That the capital invested in telegraphs in the United States is not now, and has not of late been receiving adequate compensation, is well known to all who are acquainted with the facts. The investment has been made, however, in the confident expectation of a suitable return as the country progressed in population and wealth. This Company has considered the ordinary risks incident to competing enterprises, where success depends on the patronage of the public, but they have wholly overlooked the possibility of danger from the Government, or of an attempt by Congress either to take their property or interfere with their business without just compensation, or to create a competing company, and then to confer upon that company the right of the exclusive use of the vast facilities provided for the postal service at the public expense.

Private enterprises have already established the telegraph throughout every State in the Union, and in all the Territories but one (Arizona). The value of the services it has rendered, without charge, in the interest of science, and to sufferers by fire, and flood, and pestilence, is far beyond that of all the pecuniary contributions it has received. Millions of acres of the public domain have been granted to railway corporations, while the telegraph has received no grants of land except whereon to plant its poles.

While the deficiency—nearly \$25,000,000—in the revenues of the Post-office Department within the last five years has been defrayed by taxation upon the people, the extensions of the telegraph within the same period have been made by means of private capital, furnished by private citizens. This bill attacks the results of this enterprise, and, if it becomes a law, will be fatal to them.

Second.—This bill creates a corporation, and confers upon the corporators special privileges and extraordinary powers. Upon what principle, and for what reason the particular persons named in this bill are proposed to be made the recipients of a franchise never granted by Congress before, and of immense pecuniary value, in the event that they shall be enabled, under cover of its provisions, to grasp the telegraph property of the corporations created by the States, and now engaged in the business, we are not informed. They are authorized to issue one million dollars of its stock "for expenses of organization," and as there is nothing in the bill to prevent the distribution of this stock among the corporators, we assume that to be their expectation. The bill contains no provision requiring the contribution of any money as the basis for the issue of such stock. This stock is entitled to receive dividends at the rate of ten per cent. per annum, so that Congress is, in fact, imposing a tax of one hundred thousand dollars a year, to be levied either upon the Post-offices or the senders of messages, to give a bonus to the beneficiaries under this bill, as an inducement to engage in a business in which they have now no investment, and in the conduct of which they have had no experience. If it be the policy of the Government to give so large a bonus to encourage investments in telegraphic enterprises, we submit that justice requires that companies now engaged in the business, and whose property is at hazard, shall at least be permitted to compete for the gift.

Third.—The bill provides that certain expenses, heretofore borne by telegraph companies, such as rent, lights, fuel, messenger and clerical services, and also for stamps, shall hereafter be borne by the Post-office Department—the inference being that the necessary labor can be performed without increasing either the number of officials or the expenses of the department, and that it is on account of the saving thus effected that the telegraphic service can be performed by the

corporation created by the bill at rates which all past experience in this country has found to be unprofitable. The fact that this illusive feature has escaped the scrutiny of the Committee on Post-offices and Post-roads is another evidence of the injustice of acting on the bill without subjecting its provisions to the criticisms of interested and competent experts. The bill provides for a class of messages (section 2) termed "Registered telegrams," "which shall have priority of transmission," and on which double rates may be charged. On examining the Report of the Committee, to ascertain the reason for conferring a privilege of such immense value, we find no reference made to the subject.

This Company remonstrates against a scheme which gives a million dollars to create a new monopoly, under the pretence of checking an existing one, and which, under the plea of effecting "a greater reduction of rates than was obtained in Great Britain," covertly authorizes putting aside the ordinary messages of the public, whatever the pressure of their necessities, and giving up the wires to priority messages at double rates—the effect of which must inevitably be to establish the priority rates for all messages requiring immediate despatch. The priority rates under this bill are higher than the present average rate.

We remonstrate against the passage of a bill which proposes to hire out the Government Post-offices furnished, and warmed, and lighted, and the services of Government employees to private parties, unless to the highest and most responsible bidder. Especially do we protest against being excluded from such competition, and being put on the defensive by those whose investments in the business will be made, if made at all, after they have realized from the gratuities which the bill proposes to confer.

Fourth.—The bill, in effect, exempts the property and business of the Company which it creates from State and municipal taxation; it also makes the Company the agent of the United States; so that the public would be as completely without redress, in case of neglect to forward and deliver messages, as they now are for the loss of registered letters and other valuables entrusted to the mails; at the same time all the risks of defalcations by postmasters and clerks, of theft or counterfeiting of stamps, are thrown upon the Post-office Department.

The Western Union Telegraph Company does not desire that the Government shall purchase their property. It has confidence in the future growth of the country in population, commerce and wealth. In the benefits of that growth the telegraph must largely participate. It relies upon the future for a just return for the great expenditure it has already made, and is still making, to enlarge and improve its service. If, however, this Company fails to meet the just expectations of the public, it is suggested that the true remedy is to require the surrender of its property, under the conditions of the law of 1866. But, until a state of things exists which makes interference by the Government necessary for the protection of public interests, this Company asks to be permitted to control and conduct its own business without Congressional intervention.

We remonstrate against the passage of this bill, because it would depreciate the value of the Company's property for the benefit of private parties. It cannot be that Congress would enact a law, the necessary and direct effect of which would be to depreciate the value of private property which they have the right to purchase with a view to diminish the compensation to be paid therefor.

When this Company accepted the provisions of the Act of 1866, it was upon the assumption that a compact was thereby entered into between the Government and the Company—(1), that we were not to be interfered with by Congress until the expiration of five years; and (2), that thereafter we were only to be liable to be dispossessed of our property at a valuation to be fixed by arbitrators in whose appointment we should have an equal voice. This Company submits to the Senate whether the enactment of such a law as that reported by the Committee would not be a violation of the compact into which we entered, relying upon the good faith of Congress. Under that compact we are to-day transmitting messages for every department of the Government, giving them priority over all other business, at rates fixed by the Postmaster-General,

which do not pay us for the cost of the service. Is it unreasonable in us to ask, as we now do, either that the compact be performed on the part of the Government or that this Company be released from its obligations?

Common justice requires that if Congress is to establish a competing enterprise, in which the Government is to be the active and only responsible partner, it shall leave this Company untrammelled by the restraints of a compact whose reciprocal conditions it wholly disregards.

The owners of telegraph property would be justified in petitioning Congress for relief from many of the burdens it is obliged to bear; but this Company asks nothing except a thorough investigation of the subject, at which they shall be permitted to answer any charges affecting their administration, and that they be allowed also an equitable participation in whatever privileges are offered by Congress with a view to making cheaper telegraphy possible.

The Western Union Telegraph Company relies upon Congress to protect their property from a scheme which, while it pretends to promise desirable reforms, and provides a princely bonus, ostensibly to secure them, makes no provision either for compensation to the owners for private property virtually destroyed, nor for securing to the public any of the benefits promised them. We are unable to regard it otherwise than as a scheme to enrich its promoters at the expense of the public treasury, and of the private interests which it seeks to supplant.

WILLIAM ORTON,
HORACE F. CLARK,
E. D. MORGAN,
MOSES TAYLOR,
ALONZO B. CORNELL,
AUGUSTUS SCHMELL,

Committee of the Board of Directors of the
Western Union Telegraph Company.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all telegraphic subjects, without distinction of person or opinion.
No notice will be taken of anonymous communications.

Congress and the Telegraph.

WASHINGTON, D. C., Feb. 28.

TO THE EDITOR OF THE TELEGRAPHIC.

THERE is such an absolute dearth of anything of interest telegraphically here at present, that it is a discouraging task to attempt to supply your columns with my usual weekly communication. The political warfare waged so fiercely that telegraphic contentions are nowhere. The Senate has been engaged exclusively in manufacturing political capital for the Presidential campaign, and it is as useless to attempt to talk telegraph with the honorable Senators as to interview them with reference to their chances for ultimate salvation. The members of the House have long since given up any idea of considering telegraph matters with reference to a change in the present system, and are happy in the belief that, except in Saturday debating assemblages, when nobody is expected to listen, the subject will trouble them no more—for the present session at least.

Outside of the legislative halls there seems to be nothing transpiring in telegraph circles of importance. The different offices and lines seem to be working along peacefully and quietly. The amount of telegraphing to be done is large, and appears to be despatched generally to the satisfaction of the customers.

The new management of the Western Union office is favorably regarded by the public and the employés.

The Southern and Atlantic Company are meeting with encouraging success and liberal patronage from the public as far as their line extends. The second wire on the route is rapidly being completed, and will afford much needed additional facilities. It is understood that these wires will soon be carried through from the present terminus at the South to New Orleans, and, when completed to that point, will give the Southern metropolis three routes by which to communicate with the West and North.

The Franklin Company is doing very well, any lack of local business being supplied by that received from the Southern and Atlantic.

The discussion in the local papers, in reference to the relative claims of Professors Morse and Henry to be regarded as entitled to the credit of being the actual inventors or developers of the electric telegraph, which excited considerable attention for awhile, has subsided. In fact, the situation may be summed up in the stereotyped phrase, so familiar during the late unpleasantness, of "All quiet on the Potomac." CAPITOL.

Telegraphic Meanness and Railroad Independence. —More Corporation Economy.

SUNNY SOUTH, February 21.

TO THE EDITOR OF THE TELEGRAPHIC.

THE arrangements of the Western Union Telegraph Company in this section do not seem to work as favorably as the company could wish. In the matter of reciprocal relations between the company and the railroad companies matters are not progressing as smoothly as has been the case heretofore. The Western Union Company until recently have furnished the railroad

officials with franks, good for business to New York and all points south of the Ohio river. The privilege has lately, in several instances, been restricted to the States through which their roads run, which, of course, materially reduces the value attached to them.

The Selma, Rome and Dalton, and the Western and Atlantic Railroads have recently had some instructive experiences in this line, and have received, what has long been anticipated, a "cold shake" from the Western Union officials. What makes the railroad officials more indignant is the fact that for some time past car load after car load of Western Union supplies and materials, for the construction of lines in other sections, have been carried gratuitously over the roads. In view of the services rendered the Western and Atlantic Railroad officials were awarded franks, limited to the States of Georgia and Eastern Tennessee(?)

The sense of gratitude of the officials in question, in view of the justice and liberality of the telegraph company, was overpowering! In fact, so overpowering that Mr. Joseph E. Brown, the President of the Western and Atlantic road, promptly returned them, with thanks, and reciprocated the intended favor with equal frankness by granting the Western Union Company twenty-four hours to move their offices out of the depots and other buildings along the line of the road (which they did not do in a very hankering manner), thereby closing the offices at Ringgold, Dalton, Calhoun, Kingston, Cartersville, Aikworth and Marietta, Georgia.

The time has gone by when the Western Union Company had the railroad telegraphs at their mercy, and the dictatorial and snubbing process will not answer in the South any longer.

The competition already established in the Southern section, and that which is promised in telegraphy, is releasing us from the thralldom in which we have been held by the Western Union since 1866. The competing lines are gladly welcomed and liberally supported as far as they extend, and the Southern people will give them all the encouragement and assistance in their power. SOUTHERN.

Telegraphic Extensions in Oregon.—A Swindling Telegraph Institute.—Appreciation of the Telegrapher.

ALBANY, OREGON, January 10.

TO THE EDITOR OF THE TELEGRAPHIC.

SINCE my last communication a new and complete line of telegraph has been built from Portland, Oregon, to Corvallis, Oregon, a distance of twenty-five miles. This line has been built along the Oregon Central Railroad, on the west side of the Willamette valley and river, and will make a junction with the Oregon and California Railroad at Junction City, about thirty-five miles south of Albany. The railroad and telegraph line will both be pushed along very fast next summer, and will no doubt very nearly, if not quite, make the junction with the other road. There are three (3) offices on this line: The main office at Portland, with Mr. Charles D. Failing as Superintendent and train despatcher; another at Hillsborough, with Mr. James Farrell, lately from Canada, as operator; and the third and last office, at Corvallis, will be opened next Saturday. The line has been built in No. 1 manner, with English wire screw glass insulators and good cedar poles.

Another new line has lately been built along the Northern Pacific Railroad from Kalama, W. T., to Pumphrey's Landing, W. T., a distance of about thirty miles, and new offices opened at Kalama and Pumphrey's Landing. This road will also be extended next summer over to Puget Sound as rapidly as possible.

In my last I spoke of the intention to have the Oregon and California Railroad and the two wires, W. U. and O. & C. R. R., in working order to Oakland, Oregon, a distance of 180 miles from Portland, Oregon, by December 25, 1871, which intention would no doubt have been fulfilled but that the railroad iron, expected from England in sailing vessels, having failed to arrive, it was delayed; but I learn to-day that, the iron having arrived, "the company will extend the lines to that point (Oakland) at once, and will be there by the last of March next, without fail." The present terminus is Eugene City.

The O. & C. R. R. Co. have lately put into use a new set of signals, etc., which are complete, yet so simple that no one can fail to understand them. Their mode of moving trains by telegraph is similar to that used on the Chicago, Burlington and Quincy Railroad.

For the benefit of those who have any curiosity, I will state that salaries on the O. & C. R. R. for operators range from \$45 to \$75 per month.

We are cursed with a "Telegraph College" even here in Oregon. It is situated in Portland, and a fellow calling himself "C. A. Wheeler, Superintendent," advertises: "Young men, by devoting one hour each day for three months, at the National Business College, will become first class sound operators. Scholarship, time unlimited, \$30." I understand he has a few silly country greeneyes (for so we must call them) trying to become "good sound operators."

My efforts to increase the circulation of THE TELEGRAPHIC, I am happy to say, are meeting with good success, as an evidence of which I send you herewith the names of fifteen subscribers and a postal money order for the amount of the subscriptions.

"A happy New Year" to all our Atlantic operators and friends. WEBFOOT.

Severe Weather.—A Gay Time.—Success of the P. and A. Line.—An Impolitic Manager, etc.

NEW ORLEANS, Feb. 16.

TO THE EDITOR OF THE TELEGRAPHIC.

WE have been having a queer old winter here—one that astonished the oldest inhabitants, if that were a possibility. Cold, snow, rain, sleet, wind and sultriness followed each other so rapidly, and in such a shape of comminglement, that Old Probabilities himself would have gone mad had he been here and attempted to keep track of the fluctuations of the thermometrical and barometrical indicators. Some three weeks ago we had a very pretty snow storm on an infantine scale, but it soon grew into a first class, full grown, old fashioned "Down East" sleet, and lasted the greater part of two days. The icicles on the telegraph wires attracted much attention, and elicited many curious comments, many of the people here having never seen the like before. The wires of the Western Union were down in many places for several days.

The weather has been delightful, however, during the whole of this week so far—a fact duly appreciated, as this has been a gala week throughout.

On Monday the Grand Duke Alexis arrived and was escorted to the St. Charles Hotel by the Mayor and other city officials. His public reception did not take place until Tuesday, which was also Mardi Gras, the great holiday of New Orleans.

For a great many years the day show has been of a decidedly independent character, each one giving themselves up to the pursuit of fun in his or her own way; maskers wandered hither and thither, as the humor of the moment impelled them. This year, however, the venerable King of the Carnival appeared once more among his devoted followers and brought order out of chaos. Such order! It was disorder and incongruity marshalled and disciplined into a shape in which each ludicrous whim or grotesque conception was enhanced by its incongruous surroundings. It would be impossible to describe the procession of the subjects of the King of the Carnival without using the whole of your valuable space, so it must suffice to say that it was a complete and crowning success. The Grand Duke was a pleased spectator, occupying a seat upon a richly decorated platform in front of the City Hall, while opposite, running the whole length of Lafayette square, were seats for 3,000 ladies and children. The crowd was immense, consisting of the entire population and over 30,000 strangers. Not a single accident or unpleasant incident occurred to mar the pleasures of the day.

In the evening the famous Mystick Krewe of Comus made their annual parade, presenting, as their subject for illustration, "The Dreams of Homer," and eliciting universal approbation by the gorgeousness of their costumes and the elegance of their appointments. They closed the evening with tableaux, illustrating their chosen subject, and a grand ball at the Varieties Theatre, which was attended by the Grand Duke.

There are few changes taking place in the telegraphic community here at present. The Pacific and Atlantic Co. have put their shoulder to the wheel in dead earnest, and I am happy to say that our merchants, who had long suffered the superciliousness of the Western Union management here, seem disposed to give the new line a hearty support, as is evidenced by the daily receipts. The P. and A. have as yet but one wire to New Orleans, but that is kept driving night and day. What they want now is a second wire, and the extension of the line into Texas.

Besides their principal office on Carondelet street they have established a branch at No. 70 Poydras, in the heart of the Western produce trade.

The public do not hesitate to call at the P. and A. offices for information, for it is always given cheerfully and politely, and ever will be while under the management of that urbane gentleman and accomplished good fellow, Mr. Edward Leloup. I am sorry I cannot say as much for the opposition. Short and unsatisfactory responses, if any at all, are the rule there.

The egotistic and self-sufficient manager of the W. U. here got badly taken down at the Cotton Exchange a short time since. Looking, in his overweening self-confidence, upon any other company as an intruder upon whom his highness could not stoop to waste a thought, he drew up articles of agreement, or a set of regulations, in regard to the telegraph service of the Exchange, which he submitted to the President. That functionary and his coadjutors found the demands so impertinent and exacting that it was impossible to accept them, and they, in turn, drew up a document in which a more moderate and conciliatory course was indicated than the impertinences of the selfish manager deserved; but it was of no use—the stubborn Shamus could not for a moment entertain it. The result of his egotistic stupidity was to incense all the members of the Exchange, and procure for himself a short and peremptory order to take his instruments and get out of the building. How will the stockholders like that? The P. and A. immediately moved in, and are getting along smoothly, and giving universal satisfaction. Methinks that Mr. Flannery's course, in wilfully alienating the mercantile community from the W. U. lines, in view of the competition, present and prospective, will not find much favor at headquarters.

The Gold and Stock Co. have 44 instruments in operation, which I understand give entire satisfaction to the subscribers.

Yesterday was laid the corner stone of a new Masonic Temple, which bids fair to be a grand affair when finished. The turnout was very large and imposing—the Grand Lodge being in session, and numerous stranger brethren in the city.

The Southwestern Industrial Exposition building, 350x80 feet, is being pushed forward rapidly.

Our next gala day is the 4th of March, which is dedicated to the firemen, and is always a grand holiday. I will give you an idea of it when the time comes.

DON CORADAN.

Answer to Correspondent.

Covington, Ky.—We do not know of any demand for operators in South America or Australia, or the amount of salaries paid in those countries. Would not advise any American operator to go to either without first obtaining a situation, with salary secured.

Personals.

Supts. F. M. SPEED and C. H. HASKINS, of the Pacific and Atlantic Company, were at New Orleans, La., to witness the Mardi Gras festivities; also Mr. JULES GUTHRIDGE, of Vicksburg, Miss.

Mr. RICHARD LEWIS, formerly of Austin, Texas, but lately of New Orleans, La., has left the latter city to take charge of the Cincinnati, Ohio, P. & A. office.

Mr. WM. WEST is operating in the New Orleans P. & A. office.

Mr. J. B. RUSSELL has charge of the Liberty, Texas, Western Union office.

Mr. ALLADIN VINCENT has charge of the Sassafas, La., Western Union office.

Mr. W. J. COOK, of Galveston, Texas, has accepted a position in the office of the Pacific and Atlantic Telegraph Company at New Orleans, La.

Mr. H. C. BARNEY is manager of the S. R. & D. railroad office at Cave Springs, Georgia.

Mr. A. F. BRANNON has resigned the S. R. & D. railroad office at Montevallo, Alabama.

Mr. J. W. HARRIS has been appointed to fill the vacancy in the Montevallo, Ala., office of the S. R. & D. R. R. Co.

Mr. JOH W. WARD is agent and operator on the Alabama Central R. R. at Coatsopa, Ala.

Mr. B. F. PARK is agent and operator on the Alabama Central Railroad at Marion Junction, Ala.

Mr. JEREMIAH NORTH has been promoted from the night office of the C. B. & Q. R. R. at Arlington, Ill., to the train despatcher's office of the same company at Galesburg, Ill.

Mr. A. B. MCCOY, formerly of Marysville, Cal., has accepted a position in the Reno, Nev., office of the A. and P. Telegraph Company.

Mr. B. F. BROWN, after nearly eight years' service in the Western Union office at Salem, Oregon, has resigned, to engage in other business.

Mr. EDWARD R. OWEN, formerly of Jacksonville, Oregon, succeeds Mr. BROWN at Salem, Oregon.

Mr. JNO. J. KENNY has been transferred from the Oregon and California R. R. office at Eugene City, Oregon, to East Portland, Oregon, to act as operator and assistant train despatcher.

Mr. G. Q. STEWART, from the Albany, Oregon, office of the O. and C. R. R., succeeds Mr. STEWART in the Eugene City office of the same road.

Mr. FRANK LEAHY has been transferred from "Machine shops," O. and C. R. R., to Albany, Oregon, office of same road, to succeed Mr. STEWART.

Mr. J. E. GRACE has been transferred from Junction City office, O. and C. R. R., to "Machine shops."

Mr. ISAAC FISH has been appointed operator at Junction City, on O. and C. R. R.

Mr. JAMES M. FISH has been appointed operator at Mill 4, O. and C. R. R.

Mr. WM. A. WILLIAMS has been transferred to Harrisburg, Oregon, vice Mr. J. F. CROW, who has resigned, and accepted a position as clerk and book-keeper for the "Beaver Hosiery Company" at Jefferson, Oregon.

Mr. E. L. BUGBRE has resigned his situation with the Western Union Company at Norwich, Conn., and accepted a position in the Washington, D. C., office of the Franklin Company.

Mr. A. J. MERRNESS has resigned his position in the London, Ontario, office of the Montreal Telegraph Company, and accepted a situation in the Bay City, Mich., Western Union office.

ADVICES from Buenos Ayres to January 18th state that the Transandine Telegraph is close on Mendoza, where workshops are to be established, and great efforts are to be made to get the line through the Cordilleras before the snows come on. In Uruguay the Messrs. Iamas have obtained a concession for telegraphs to all the towns in the State, and to connect at Concepcion del Uruguay with the Argentine lines to the north and east.

The submarine telegraph cables in China are suffering from the attacks of some minute crustacean, so small as to be scarcely perceptible to the naked eye. Various breaks have been traced to the agency of these animals, who imbed themselves in the gutta percha.

The Telegraph.

The Official Tampering with Telegraphic Despatches in England.

Mr. MONSELL, Postmaster General, made the following statement in the House of Commons relative to the tampering with news despatches in the telegraph office:

"On the 7th of December four postal telegrams were delayed for, I think, about four hours; and on the 8th of December there were six delayed, but only, I believe, for a few minutes. This was done without the knowledge or sanction of the Government. As to the last question of my honorable friend, I think that the best answer I can give to him will be to read the reply which I directed to be addressed to the resolution of the Manchester Chamber of Commerce, complaining of the delay of telegrams by the department during the recent strike: 'The department had to deal not only with an organized opposition within itself, but also with an intention to put the public to the greatest possible inconvenience, as a means of coercion. When it was found that the machinery of the department was used against the objects for which it was established, the necessity arose for immediate action in the interests of the public, and the detainment of the telegrams which was complained of was made openly and without any attempt at concealment. The language of the act of Parliament bearing upon the subject appeared to me to be so clear and precise, and the importance of maintaining public confidence in the inviolability of telegrams sent through the post-office so manifest, that I found myself unable to give an official sanction to proceedings which, nevertheless, I believe to have been dictated by a sense of public duty.' I then promised that clear and definite instructions should be issued on the subject. Those instructions have been drawn up and circulated to the whole of the telegraph departments. Therefore, I trust that the course I have taken has secured the inviolability of telegrams, to which naturally the public attach the greatest possible importance; and that has been accomplished without passing a censure upon an official whom I am sure every member of this house will agree with me in regarding as a most meritorious officer. [Hear, hear]."

Foreign Telegraphic Notes.

At a special meeting of the Société du Cable Trans-Atlantique Français, held in London, February 5th, resolutions were passed authorizing the directors to enter into arrangements with the holders of "the omnium shares" (which have hitherto possessed certain privileges), by which the holders of those shares will, in future, be placed on an equality with the other shareholders.

It was also agreed, after considerable discussion and taking a poll, that from the 1st of January, 1872, all profits which remained after providing for the expenses of working the company should be deemed as net profits, and should be divided, after the directors had set apart such sums as in their judgment might be necessary as a reserve fund, available for meeting any claims or contingent liabilities against the company, for the equalization of dividends or for any other purpose, the residue of the net profits should be divided among the holders of the shares of the company as dividend in proportion to their shares.

A dividend of £2 5s. per old share, and 16s. per new share, being at the rate of 10 per cent. for the year, has been declared by the India Rubber, Gutta Percha and Telegraph Works Company.

During the month of January last 2,954 single messages passed over the lines of the Great Northern Telegraph (China and Japan Extension), the net receipts for which amounted to 110,995 francs.

The traffic on the lines of the Great Northern Telegraph for the month of January, 1872, aggregated 30,530 messages; revenue estimated at 86,277 francs; an increase over the corresponding month of last year of 4,387 messages and 11,872 francs revenue.

Telegraphic Brevities.

THE offices of the Selma, Rome and Dalton Railroad and Shelby Iron Company at Columbiana, Ala., were destroyed by fire January 28th.

There have been 72 patents granted for post-hole augers, the first dating back to 1825, and the last October, 1871.

Telegraphic Prospects.

It has been our custom, for some time past, in referring to the progress in telegraphing during a year past, to refer also in some manner to the prospects of the year present. A glance at our summary of January 13, 1871, will show that in most points our foreshadowings have been correct—the China extension has brought with it telegraphic communication to the Japanese Islands, the Australian cable has been laid, and several other important works completed. The South Pacific cables have not as yet been laid; the success attending the West India cables has not been as great as predicted, although, as we stated, a duplicate cable has been laid from Key West along the Florida Coast.

Turning to the Atlantic cable question. No new cable has been laid, although there have been great signs of another direct Atlantic cable, and a company

has appeared for laying a cable from Spain to the coast of South America.

Complete telegraphic communication with the Australian colonies has not yet been obtained; the cables are complete, and we are in direct telegraphic communication with the Northwest coast, the cables having been landed at Port Darwin, but the erection of the land line seems to have been attended with more difficulties than were originally imagined; it is, however, to be hoped that before half of the present year has elapsed the necessary land lines will be complete, and our morning papers will have daily telegraphic news of the doings of Melbourne and other important places.

The question of the necessity of reducing the tariff of messages to America points only to its being reduced by competition from the laying of another cable, more cheaply constructed, and carrying messages at a reduced price. It is uncertain whether such a cable can be laid during the present year, but we may be sure that sufficient action will be taken to ensure its submergence during the following year.

Matters have so far advanced with regard to a South Atlantic cable that we shall doubtless hear more of it, and the junction of Southern Europe with Southern America may be looked upon now as a step that will surely take place ere long.

The extension from Shanghai to Nagasaki, in Japan, is but the forerunner of the extension to the several Japanese islands—and those islands being telegraphically complete, the uniting the Philippine islands must naturally follow as a consequence to telegraph enterprise.

America cannot be long satisfied with all her telegraphic communications passed round by the long eastern route, when so much shorter a course appears by steering westerly; and a project, to be completed in the not far distant future, is the laying of cables from the Pacific coast of the United States westward to those points now united with Asia. When that event comes to pass, Shakespeare's wonderful prophecy of the encircling the world will at length be fulfilled.

Before that event comes to pass the rapid accumulation of business on the Eastern lines will prove too much for the capacity of the cable, and then duplication of the routes, or new routes will be required to carry the increase of messages. Large as has been the manufacture of submarine telegraph cables during the past year, there is nothing to show that the world has been glutted with cables, and that this specialty of Great Britain has been brought to a standstill; on the contrary, there seems every probability of there being plenty to do—sufficient to keep the majority of factories hard at work.

The increase of telegraphic business at home and elsewhere tends most strongly to the improvement of telegraphic instruments, to render them more capable of transmitting the same amount of work at a greater speed; and we feel sure, where instruments have been brought to their greatest perfection as regards speed, other inventions will follow to give a great impetus to the work.

At home we have seen the extraordinary success in the working of the shilling universal rate; this can only lead to a further reduction in the tariff, which, we feel sure, will not only be an immense boon to the public but will also prove remunerative to the State. Telegraphic business has invariably proved most elastic, and doubtless will do so also on the reduction of the tariff to a sixpenny rate.

In every country, at home and abroad, we see men, philosophers and students, assiduously at work on the hidden mysteries of electricity, bringing forward new facts and new points, all of which have in one way or another been applied to the practical working of the telegraph. These studies and researches will still progress, still increase our knowledge, and act beneficially towards the improvement in working the telegraph in every way, expediting our means of communication, and at the same time decreasing our expenditure.

The nature of telegraphy is adverse in itself to being stationary. We are certain that, as day follows day, so improvement will follow improvement, and extension succeed extension, and that the net result of each year's balance will show a decided gain in telegraphic enterprise and success.—*The Mechanics' Magazine.*

Fruits imported per Atlantic Cable—Currants and fresh dates.

New Patents.

For the week ending February 20, 1872, and bearing that date.

No. 123,878.—TELEGRAPH INSULATOR. David R. P. Emminger, Harrisburg, Pa.

An insulator constructed with its outer surface conical or flaring from the apex to the base, provided with the peculiarly shaped and grooved projections *a a a*, as herein set forth, and for the purposes specified.

No. 123,923.—ELECTRIC LIGHT. Auguste Annet Meynial, New York.

1. The retrograde mechanism actuated by the armature of the electro-magnet which carries the stop lever, in combination with the slides which carry the electrodes, substantially as herein shown and described.

2. The retrograde lever, having two arms of unequal length, the longer arm to produce the retrograde movement of the positive electrode and the shorter arm that of the negative electrode, so as to compensate for the increased consumption of the positive electrode, substantially as set forth.

Born.

LONG.—At Chicago, Ill., January 2d, 1872, to Mr. Wm. C. Long, of the Chicago Western Union office night force, a daughter.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, MARCH 2, 1872.

Remonstrance against the Postal Telegraph Schemes.

THE importance of the remonstrance of the Western Union Telegraph Company against the bill now pending in the United States Senate, known as the HUBBARD bill (a synopsis of which has appeared in the correspondence of CAPITOL, heretofore published), to establish a telegraphic monopoly in this country, is sufficient justification for the space which it occupies in our columns this week. This remonstrance will, upon careful perusal, be found interesting as well as important to all who are interested in telegraphy, either as a business or as employes, and we hope that it will receive the attention and consideration which its interest and importance calls for.

It finally dissipates the impression which has been very general, and in which THE TELEGRAPHER has shared heretofore, that in reality the Western Union Company were not, in good faith, and to the end opposed to Mr. HUBBARD's scheme—but that, in some way, in the event of its being carried out, that company expected to be benefited by it. It was the general belief, which, if we have not been misinformed, was encouraged by the clique or ring which, for the last two years, has been speculating in and manipulating the Western Union stock, that it was the purpose of the managers of that company, after sufficiently advancing the price of its shares, to sell it out in some shape, either directly for a Government telegraph, or indirectly through the HUBBARD or some similar scheme. The letter from President ORTON to Hon. JAMES B. BECK, of December 6th last, effectually disposed of the first or direct plan, and this remonstrance defines the position of the company in opposition to the indirect schemes. We think that those who are opposed on principle to any interference, directly or indirectly, by the Government in the telegraph business, may count upon the Western Union Company as *bona fide* opponents of these schemes.

The remonstrance is well written, and we think presents arguments and reasons which would prevent any such inconsiderate action, even on the part of the Senate, as is recommended by the committee which reported the HUBBARD bill. The report of that committee appears to have been a foregone conclusion, and the subject one which its members did not consider required any investigation. So far as appears the opponents of the bill were afforded no opportunity to be heard in regard to it. Notwithstanding the committee, which alone had given any adequate attention or examination to the subject, reported adversely to this bill, as well as to the schemes for a postal telegraph, pure and simple, the Senate Committee, ignoring the facts in the case and the results of that investigation, upon an *ex parte* (if any) examination and presentation of the subject, make a report urging the adoption of a policy and the passage of an act, the effect of which would be to revolutionize and demoralize the telegraph service of the whole country, and destroy at one blow millions of dollars of capital which had been invested in the telegraph business.

It is coolly proposed to do this, too, in the face of a solemn compact and agreement which the Government had made with the telegraph companies through the National Telegraph Act of 1866! That act prescribes a mode in which the Government can, if desired, obtain possession and control of the lines and franchises of the companies which should accept its provisions—which the Western Union, and, we believe, every other telegraph company of any importance has done. In view of this fact, and of the vested rights of these companies, is it not evident that the passage of the HUBBARD bill into a law would be an act of bad faith, such as no great nation like the United States can afford to be guilty of?

We would call especial attention to the valuable grants of special privileges, powers and pecuniary benefits, which the HUBBARD bill confers upon the corporators named in that act. The Treasury or the public is saddled with a large percentage of the expense incurred by telegraph companies now, and with one million dollars of bonus stock, to be divided among the corporators—which, when the whole thing is eventually absorbed by the Government, as it inevitably will be, must be redeemed in cash at not less than par value. It is a very good scheme for the corporators but don't look quite so favorable for the Government and people.

The provision for a system of priority messages at an extra rate is a very cunningly devised plan to remedy the effects of a nominally low tariff on unregistered messages. The effect of this would inevitably be that all commercial and important despatches would pay the extra rate, and the social messages would take their chances of being sent at night and delivered when convenient.

We have not space or time to go into this matter more extensively now, neither is there any such prospect of the passage of the act as to necessitate the occupation of our columns further with the subject at present.

We are very much pleased that the Western Union Company, through its Executive Committee, has thus arrayed itself squarely against these schemes. What are the other telegraph companies doing? Are they in league with the HUBBARD party, or do they desire that the Western Union Company shall be recognized at Washington as the only telegraph organization of any importance in the country? If they desire to be considered of any account, or to be recognized as component parts of the telegraph system of the country, they should make their existence known in some other way than through the doubtful compliment of the slight allusions which the Western Union officials vouchsafe to them in their official communications upon this subject.

Typographical Blanders and Corrections.

WASHINGTON's birthday seriously interfered with the making up and publication of THE TELEGRAPHER last week. As we were not informed, until too late to make the necessary arrangements, that the printers proposed to "celebrate" on the occasion, the paper was delayed beyond the usual time, and several errors occurred which do not usually disfigure the paper. The most important of these were in the fourth line of the excellent article of Mr. BROOKS on "Induction in Overland Telegraph Lines," where it is somewhat ridiculously stated that the Atlantic cables are worked "by the charge of a 'condensed accumulator.'" Our scientific friends, of course, understood that this should have been "a condenser or accumulator;" and in the concluding paragraph the words "in temperature" should be omitted after "five hundred degrees lower," to make sense.

The signature (" * ") to the communication on "Encouraging Indications for the Future" was also omitted.

We will not further particularize, but hope that our friends will credit any other errors or omissions in last Saturday's TELEGRAPHER to WASHINGTON's birthday.

The March Magazines.

PHRENOLOGICAL JOURNAL.

THE *Phrenological Journal* for March is, as usual, promptly upon our desk, and is an excellent number. Its contents are varied, interesting and instructive, and will repay perusal. The care and ability with which this magazine is edited make it one of the most valuable of the monthly publications of the country, and entitle it to the success which it has obtained. It is embellished with numerous well executed cuts—this number having very correct portraits of U. S. Attorney-General WILLIAMS, Rev. GEO. H. HEPPWORTH, Miss HARRIET HOSMER and JAMES FISK, Jr. Published by SAMUEL R. WELLS, 389 Broadway. \$3 per year.

THE MANUFACTURER AND BUILDER.

We have received the March number of this leading journal of the industrial arts and sciences, which is filled with valuable articles of interest, not only to the artisan and mechanic but also to the merchant and professional man. Altogether this number is one of the most generally entertaining and interesting that

we have yet seen. Published by the Engineers and Manufacturers' Publishing Company, No. 37 Park row, New York. Subscription, \$1 for six months; \$2 per year.

American Enterprise in England.

WE understand that Messrs. GEO. B. FIELD and E. W. ANDREWS, who were formerly largely interested in the Gold and Stock Telegraph Company of this city, have concluded an arrangement with the Post-office authorities in Great Britain, under which they will at once proceed to construct a system of reporting telegraphs in several of the principal cities of the United Kingdom, very similar to that of the Gold and Stock Company of this country. The Edison Universal Stock Printer will be employed on these lines, and all the instruments used will be of American manufacture. It is understood that Mr. E. A. CALAHAN, who has resigned the superintendency of the Gold and Stock Company, will shortly proceed to England to take charge of the organization of the new system.

A Merited Compliment to a Lady Manager.

WE understand that a large number of the leading merchants and brokers connected with the cotton interest in this city have united in a request to the Executive Committee of the Western Union Telegraph Company, for the appointment of Mrs. M. E. LEWIS as manager of the office about to be opened by that company in the new Cotton Exchange. This is a graceful and well merited compliment to Mrs. LEWIS, and, under the circumstances, we have little doubt that the officers of the company will cheerfully comply with the request. Mrs. LEWIS came from New England eight years ago, an entire stranger in the city, and was placed in charge of the Pearl street office—then just opened by General LEFFERTS, of the American Company. By her energetic and capable management, and strict attention to the duties of her position, she has succeeded in building up a business scarcely second to that of any branch office in the city—a result, in a great measure, due to her policy of employing the best operators that could be obtained.

The Competing Lines and Projected Atlantic Cables.

Mr. W. D. SNOW, one of the Executive Committee of the Atlantic and Pacific Telegraph Company, sailed in the steamer St. Laurent last Saturday for Europe. We learn that during his absence he will investigate the different schemes for laying new Atlantic cables, and if he finds that either of the projected enterprises is likely to be carried out, is prepared to make arrangements for connections for the same with the lines now competing with the Western Union Telegraph Company in this country, upon terms mutually beneficial to the parties in interest and the public.

To our Chicago Friends.

Mr. WM. C. LONG, of the Western Union office at Chicago, Illinois, has kindly consented to act as agent for THE TELEGRAPHER in that city. We hope our friends in that city will cooperate with him in securing for the organ of the telegraphic fraternity a liberal and generous support.

Miscellaneous.

PNEUMATIC TELEGRAPHY.—The vibrations produced by intermittent pressure upon a column of air are a poor substitute for the pulsations of the electric wire, but some foreign inventors appear to have faith in the feasibility of this system of telegraphing, and one of them has received an English patent on a modification which consists in the adaptation of a barometrical tube to the purpose of telegraphy, and the indication of letters and figures by rises and falls of a liquid column.

BATTERIES.—The following are some recent determinations of the electric-motive force of batteries, by M. Beetz, obtained with great accuracy:

Bunsen's element.....	1.779 volts.
Grove's ".....	1.684 "
Leclanché's ".....	1.167 "
Daniell's standard element.....	1.000 "

The following are the results obtained some time since by Mr. Latimer Clark:

Daniell (standard).....	1.079 volts.
Daniell (telegraph).....	0.978 "
Leclanché ".....	1.481 "
Bunsen ".....	1.881 "
Grove ".....	1.956 "

16,000 MILES OF "JOHNSON'S" WIRE USED BY THE TELEGRAPHS OF THE UNITED STATES DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
MANCHESTER, ENGLAND.

Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

TELEGRAPH LINES

OF ANY LENGTH FULLY EQUIPPED WITH

WIRE, INSULATORS, BATTERIES,
INSTRUMENTS, ETC.

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No. 8 DEY STREET,
NEW YORK.

Sole Agents for "Johnson's" Wire.

" " " American Compound Wire.
" " " Cauvet's Patent Screw Insulators.
" " " Sam'l O. Bishop's Insulated Wires and Cables.
" " " Brooks' Patent Paraffin Insulators.

Manufacturers of every description of

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GRAY & BARTON,
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keeps constantly on hand and for sale a full assortment of all lengths and sizes of TELEGRAPH POLES, and is prepared at all times to fill orders and make contracts for supplying Poles on the shortest notice

Yard and Office on FISK STREET, near TWENTY-SECOND, Chicago, Ill.

CHARLES WILLIAMS, JR.,
(ESTABLISHED 1856.)

109 Court Street, Boston,

has for sale the various kinds of Office and Magnet Wires, including Cotton covered, Silk, Gutta Serena, Painted, Fancy, and

DAY'S KERITE COVERED WIRE.

A LADY DESIRES A SITUATION AS
OPERATOR in a Country Office, or on a Railroad Line
Has good references.

Address, "A. J.," BOX 6010,
NEW YORK CITY.

AMERICAN FIRE ALARM AND POLICE TELEGRAPH.

GAMEWELL & CO., Proprietors,

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Special Agent for Virginia and North Carolina.

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THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

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Allegheny, Pa.,
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Bridgeport, Conn.,
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Columbus, Ohio,
Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. O.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
Washington, D. C.,
Worcester, Mass.

The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM AND POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original FARMER & CHANNING PATENTS, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION OF CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above,

TELEGRAPH WIRE.

CHARLES T. CHESTER

Desires to call the attention of
Telegraph Companies and Line Builders

To a new article of

TELEGRAPH LINE WIRE
OF

Unequalled quality and uniform excellence.

While great care and attention has been given to instruments and insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European governments, only fit for fencing purposes. Many tons of such material now remain here utterly unsaleable and unfit for use.

The able men who by their researches in Electricity, have solved the problem of Telegraphy through thousands of cable miles, have not neglected the subject of aerial lines, and their labors have fixed for Europe a standard of excellence, and means for preserving it, far exceeding that with which we have been hitherto content.

We extract from the minute and specific details a few of the requirements of a

STANDARD GOVERNMENT WIRE.

1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated, as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be coiled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications

A BREAKING STRAIN OF 1,260 POUNDS

or No. 8 wire is called for, and a capability of

Twisting upon itself 18 times

without rupture in a length of six inches.

Being convinced, from a long experience in construction of lines and sale of wire, of the necessity of this rigorous and faithful system of test applied uniformly, and to every bundle of wire sold by us, we have made complete arrangements to supply, and now offer for sale

This uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market.

We shall designate it by the Trade Mark,

CHESTER, A 1,

and our customers ordering it may be sure of receiving an article always uniform and always the very best. The capacity or endurance of No. 9 is

21 to 23 twists upon itself,

in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

COMPARATIVE AND COMPETITIVE TESTS

with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 39. The omission of the elongating process would increase the flexibility and the tenacity.

Although the Wire has been

PROVED IMMENSELY SUPERIOR

to that commonly sold, its price will closely approximate to that of the inferior article.

AMERICAN COMPOUND
TELEGRAPH LINE WIRE.COPPER FOR
CONDUCTIVITY.STEEL FOR
STRENGTH.

The superiority of the COMPOUND TELEGRAPH WIRE, compared with iron, consists in its LIGHTNESS, reducing by over fifty per cent. the number of poles and insulators required;

Relative TENSILE STRENGTH, homogeneity and elasticity—decreasing the liability to breakage from cold weather, sleet, etc.;

CONDUCTIVITY—insuring great improvement in the working of lines in any condition of the weather;

And in its DURABILITY, which greatly exceeds that of the best galvanized iron wire;

Altogether resulting in a very great reduction in the cost of maintaining and working telegraph lines, while, at the same time, insuring

EFFICIENCY AND RELIABILITY.

Address—

American Compound Telegraph Wire Co.,

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Agents in New York,

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ATTENTION, OPERATORS!

PATENTED



APRIL 4.

We would call your attention to our

Telegraph Operators' Badge Pins.

Having completed our arrangements to manufacture, by putting in new machinery, and with a full force of workmen, we are now ready to supply the great demand for these Badge Pins. They are made of 18 Carat Gold, and are perfect fac-similes of the present Morse or Curved Lever Keys and new style Western Union Straight Lever and Fancy Base Keys. We are making two different sizes—one to be $\frac{1}{4}$ of an inch long and the other one inch long. Also, a very small, neat Badge Key Pin for Lady Operators. These are the only Badge Pins ever got up exclusively for Operators.

We are also manufacturing a complete set of Railroad Badge Pins, for Conductors, Baggage Masters, Brakemen, Station Agents and others, consisting of Punches, Passenger Cars (Pullman Palace Pattern), Switch Targets, Coupon Tickets, &c. These Badges are all made of the most approved patterns.

PRICE LIST.

Key Pin, Oval Base, one inch long.....	\$6 00
Key Pin, Oval Base, $\frac{1}{4}$ inch long.....	5 00
Key Pin, Fancy Base, one inch long.....	7 00
Key Pin, Fancy Base, $\frac{1}{4}$ inch long.....	6 00
Key Pin, Oval Base (for Lady Operators).....	5 00
Key Pin, Fancy Base (for Lady Operators).....	6 00
Key Pin, Charm for Watch Chains.....	\$5 00 and 6 00

† The above are made with straight or curved levers.

Conductors' Punch Pin.....	\$4 00
Passenger Car Pin (Pullman's Palace Pattern).....	6 00
Switch Target Pin.....	4 00
Coupon Ticket Pin (Enamel).....	4 00

† The above are all made of 18 Carat Gold (Warranted). ‡

Persons ordering Key Pins, be particular in giving style of Lever and Base wanted.

Any of the above will be forwarded by Express (C. O. D.) or by mail, registered, by remitting amount and 25 cents extra to pay postage and registration fee. Address,

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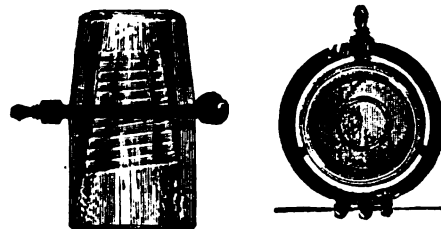
NEW YORK,

EXECUTES ALL DESCRIPTIONS OF

BOOK, JOB AND COMMERCIAL PRINTING.

TELEGRAPH PRINTING A SPECIALTY.

CHESTER'S PATENT INSULATOR.



The undersigned solicit examination of some of the reasons which have induced them to recommend to their patrons and friends the Insulator exhibited above as the best and cheapest in use.

Experience has shown that pure glass is, under certain conditions, nearly a perfect insulating medium, and could these conditions be uniformly maintained for all purposes of practical telegraphing, we might rest there, satisfied that so long as the conducting wire be separated from its various points of support by a glass shield, of whatever size or shape, that there could be no escape of current from the conducting wire.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The conducting media, which, to a greater or less degree, are inseparable from ordinary insulators of glass, hard rubber, earthenware or porcelain, are continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire.

It is also evident that the amount of conductivity over each and every insulator, arising from these causes, is decreased by the longer distance the current must traverse these imperfect conductors between the wire and its point of support, and is increased by the increased diameter or breadth of the Insulator, as affording a greater number of these lines of conduction. When glass only is regarded, another objection also exists to great thickness, in the fact that the unequal cooling of the mass produces innumerable microscopic surface fissures, which at certain temperatures absorb moisture from capillary attraction.

Glass of ordinary surface, such as is used for ordinary Insulators, hard rubber, porcelain and earthenware, have in different degrees the capacity for receiving and retaining surface moisture in continuous lines, either from direct showers or by the condensation of moisture upon even an apparently dry day, when the thermometrical changes are such that the temperature of the Insulator is less than that of the atmosphere.

The original surface fractures alluded to in ordinary Insulators of glass are much increased, and others are produced by the necessary strains and shocks to which they are exposed during the erection of the wire and its subsequent awaying. These are the more vicious, as they are not apparent from any ordinary point of observation.

Hence, the requisites of a perfect Insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

In the construction of Insulators great ingenuity has been exercised to give strength, and yet elongate and narrow the lines of superficial continuity. The support of the wire has been drawn out to as great a length as is consistent with strength, and the glass has been made narrow, and Insulators thus made have proved very serviceable. It is obvious that there is a limit to this idea under old forms of construction.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal. It requires no labored description to bring out the self-evident fact. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH. The removal or substitution of an Insulator, without disturbing the conducting wire, is an incidental advantage of this construction.

CHARLES T. CHESTER,

104 Centre Street,

NEW YORK.

L. G. TILLOTSON & CO.,
 8 DEY STREET, NEW YORK,
 AND
BLISS, TILLOTSON & CO.,
 295 West Randolph Street, Chicago, Ill.,
 GENERAL AGENTS FOR THE SALE OF
SUBMARINE TELEGRAPH CABLES
 AND
INSULATED WIRES,
 of various kinds, insulated with PURE GUTTA PERCHA,
 COTTON and SILK. Manufactured by
SAMUEL C. BISHOP,
 at the Manufacturers' prices. Sole Agency in the United States
 for the celebrated
GALVANIZED WIRES
 Manufactured by Messrs. RICHARD JOHNSON &
 NEPHEW, Manchester, England.
Long Lengths; Superior Quality; Low Prices.
 SOLE AGENTS FOR THE
American Compound Telegraph Wire Co.,
 OF NEW YORK.

The superior quality of this Wire consists in its LIGHTNESS,
 STRENGTH, CONDUCTIVITY and DURABILITY; in all of which re-
 spects it greatly exceeds Galvanized Wire.

SOLE AGENTS FOR
BROOKS' IMPROVED
PATENT PARAFFINE INSULATORS.

A Stock of these Insulators always on hand.

MANUFACTURERS OF THE

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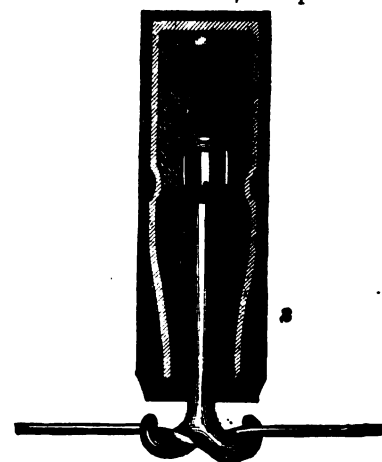
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The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 31.

New York, Saturday, March 23, 1872.

Whole No. 297

Original Articles.

Anders' Magneto Dial Telegraph Instrument.

THE extensive demand which has grown up within a few years for private telegraph lines is a marked feature in the history of modern telegraphy. The great convenience and even necessity of a communication of this kind, by which any manufacturing establishment or other business, comprising two or more distinct departments situated at a distance from each other, is practically brought together, is too apparent to require discussion. Until a comparatively recent period, the principal obstacle to the rapid multiplication of this class of lines has been the want of instruments which would in all respects meet the peculiar requirements of this class of telegraphy. An instrument, to be capable of answering these requirements, should be simple in its principle and mode of manipulation, and susceptible of being comprehended and operated readily by persons having no special knowledge of telegraphy in general.

The instruments which experience has shown to be best adapted for use on private telegraphs may be divided into two classes—the dial and the type printer—each possessing some special merits of its own. The dial instrument is the most simple in its construction and manipulation, the most rapid in transmission, and the least liable to derangement, while, on the other hand, the type printer preserves a record of all communications transmitted—which is, in many instances, a matter of importance. In general terms, it may be said that the kind of instrument to be used will depend, in a great measure, upon the character of the business to be done, and other conditions existing in each particular case.

The dial instrument indicates communications, letter by letter, by means of a rapidly revolving index hand or pointer upon a dial, stopping for an instant as each letter is reached. Dial instruments may be divided into two classes—those operated by ordinary voltaic currents forming one class, while the others are worked by magneto-electric currents, generated by means of permanent magnets.

One of the best instruments of the latter description which has ever been brought to our notice is represented in the accompanying illustration, and is the invention of Mr. George L. Anders, of Boston, Mass. Dial instruments operating on this principle are by no means new, having been for many years in extensive use in England and on the Continent, as well as to a limited extent in this country. The well known A B C instrument of Professor Wheatstone, and the dial apparatus of Siemens & Halske, of Berlin, are both magneto instruments. Mr. Anders has sought to combine the most valuable features of the above mentioned instruments in his invention, at the same time avoiding several more or less objectionable ones, in which effort he appears to have met with a great degree of success. By the employment of a generator of

unusual power Mr. Anders avoids the necessity of extreme delicacy and lightness in the construction of the moving parts of the indicator, which has been an objection in most other instruments, and is, at the same time, enabled to increase the size of the dial. An incidental advantage of this fact is that the apparatus is much less sensitive to atmospheric influences, as

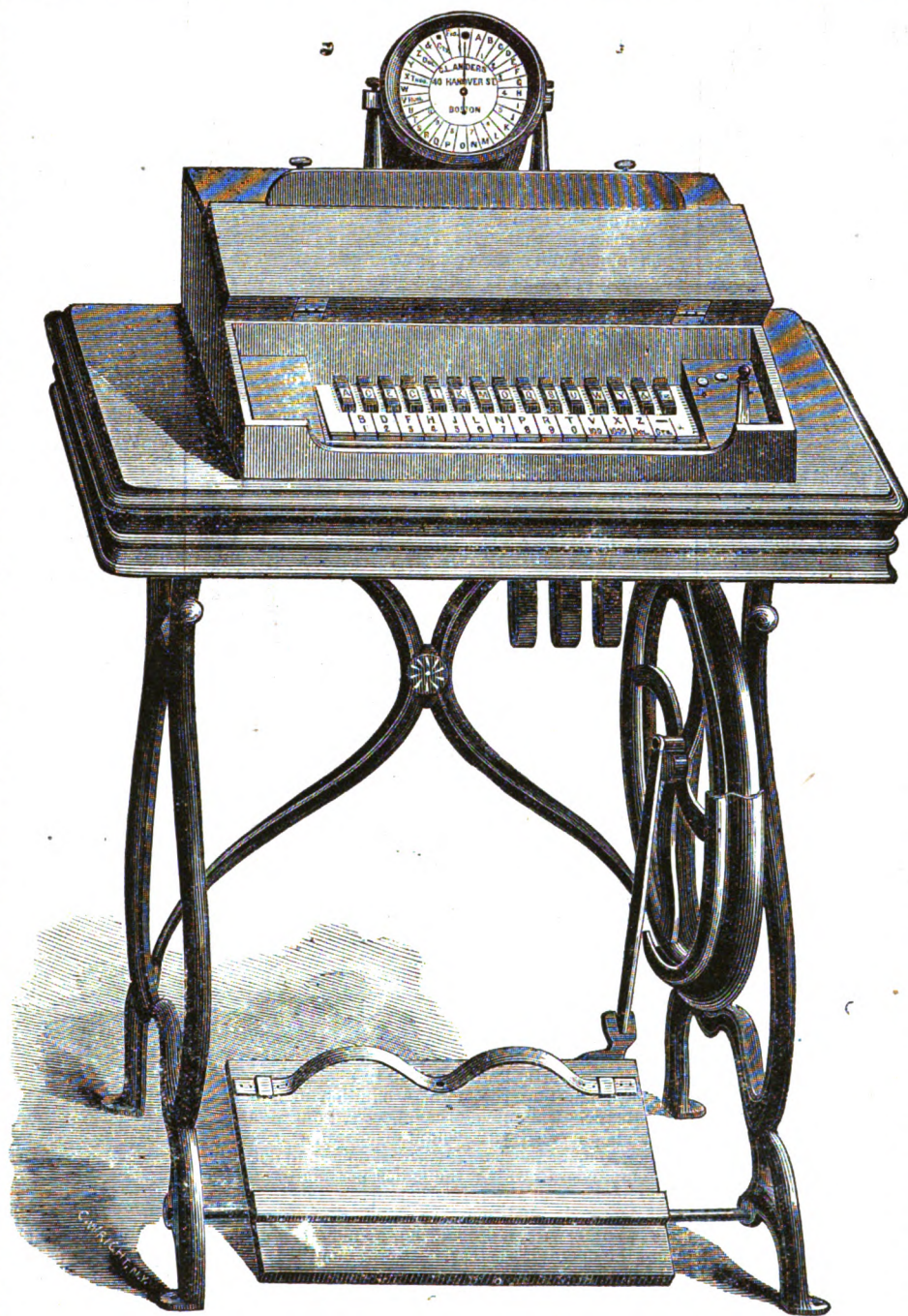
which indicates the letters in the manner previously referred to. No battery of any description is required with the instrument—all the electricity required being generated simply by the revolution of the indicator by means of the treadle. The whole apparatus occupies no more space than an ordinary sewing machine.

These instruments have been for some time in use on the police telegraph lines in Boston, as well as by a considerable number of manufacturing and other private establishments, and have given entire satisfaction. Some of the parties using them say that they have succeeded in transmitting communications at the rate of thirty words per minute, and it is probable that even this rate could be considerably exceeded by a thoroughly skilled operator.

Each instrument is provided with a signal bell, for giving notice when a communication is to be transmitted.

Experience shows that this instrument will work well and rapidly either on long or short lines—the only condition being that when running for a long distance on the same poles, with wires carrying heavy battery currents, the line be properly insulated.

Any further information respecting this invention may be obtained by reference to the advertisement in another column, or by addressing Geo. L. Anders & Co., manufacturers, 40 Hanover street, Boston, Mass.



Humors of the Telegraph.

A PENNSYLVANIA correspondent sends us the following: Having laughed a good many times over your "Humors of the Telegraph," I will contribute my mite, viz: To-day a man, not very familiar with the telegraph, called at the office, sent a message to Kittanning, and, on receiving the answer, he studied it a few moments and then said, "I don't know that Kittanning feller's writin'—please read it for me." We read it, and he went off fully satisfied that we had given him the original, as left in "K" office.

Here is another, which will interest our "student" readers:

Some years ago, on a New York State railroad, an ambitious baggage agent at a certain station, considering himself better qualified, by natural and acquired ability, to deal with harnessed lightning than to handle baggage checks, obtained permission to "practice." Several months of hard practice resulted as follows: One day Jack, entering the office, spies two messages on the hook for "A," and obtains permission

to send them. After considerable hard work Jack was observed arms akimbo, a look of conscious triumph overspreading his face, with his legs crossed and his feet resting on the table. The operator, who has been busy, hears "A" calling furiously, and, while answering, interrogates Jack. Operator.—"Jack, did you send those two messages to 'A'?"

Jack.—"Oh, yes! I sent them all right."

Operator.—"What did he say when you got through?"

Jack.—"He said 'R R.'"

well as less liable to derangement from accidental contact of the line wire with other telegraph wires conveying the current of powerful batteries.

The general appearance of the apparatus is well shown in our engraving. A portion of the magneto indicator is seen projecting below the table at the left of the fly wheel. When transmitting, the fly wheel and indicator are rotated by means of the treadle, and the words spelt out by the successive manipulation of the keys upon the key-board. At the back of the instrument is seen the indicator, the pointer upon

The remarks of "A" are hardly suitable to record in a decorous newspaper like THE TELEGRAPHER. If not polite they were certainly *emphatic*.

The (British) Society of Telegraph Engineers.

THIS young but welcome and necessary addition to the lists of scientific, learned and technical societies, held its opening meeting on Wednesday evening (Feb. 28), at half past seven. A numerous attendance evidenced the interest taken in this practical inauguration of what will, we doubt not, prove to be a most valuable society. We noticed, some four or five months since, the establishment of this society, and the formation of a council, code of rules, &c. Mr. C. W. Siemens, D. C. L., F. R. S., the President, took the chair on Wednesday, and delivered his inaugural address, which we shall notice at length next week. He adverted to the delay that had taken place in convening the opening meeting, which he explained was in the permanent interests of the Society, and further pleaded for an act of indemnity from the general body of the members, in condonation, *ex post facto*, of certain transactions of the Council, diverging somewhat from the course prescribed at the outset, especially in relation to the class of foreign members who are to have all the privileges of affiliation, on payment of an annual subscription of one pound sterling. The cordial and unanimous response granted by the Assembly, as also in the matter of new members, by show of hands in lieu of by ballot—somewhat informal—supplied a gratifying endorsement of the action of the representative body. The rules drawn up by the Council were accepted as the statutes of the Society, twenty-three new members were elected, and the announcement was made of the accession, as foreign members, of all or nearly all the delegates at the recent Telegraphic Congress at Rome. The subject of the first paper will be "On Automatic Instrumentalism," by Mr. Culley.—*The Mechanics' Magazine*.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Train Despatching.—A Letter from "Hindoo."

OUT WEST, March 13.

TO THE EDITOR OF THE TELEGRAPHER.

I HAVE noticed in your paper an editorial and several communications commenting on my contributions to the *Railroad Gazette*, and have therefore placed myself on your list, hoping to hear more from your correspondents on the subject of train despatching. None of them appear to be readers of the *Railroad Gazette*, in which paper this question is fully discussed. In its issue of March 2d I gave my ideas of the causes of the inefficiency of the American system, and to that paper must refer "M." and "Grand Trunk," who urge that the system is good and safe, but that the employés are inefficient and unequal to their duties. In fact, what those writers say amounts to this—that the system does not provide a certain method of consummating collisions, *ergo*, it must be perfectly safe! This week I send to the *Gazette* a "Code of rules for the movement of trains," which I should like you to reproduce, if you can spare room, for the benefit of your readers, whose criticisms will be useful.

"M." says, "Is not the station master as liable to make mistakes as the operator?" Precisely so; therefore the system should provide against such liability.

In your editorial you say—"It does not seem possible * * * that roads like the Michigan Central, C. B. and Q., Chicago and N. W., and many others, could be worked with a heavy traffic on a single track, for a long series of years, without occasional serious accidents, directly chargeable to the defects of the system." Here, sir, you speak "without the book." There have been, I understand, several serious accidents on those roads, directly chargeable to the system.

"Grand Trunk," with "accidents occurring all around him, is willing to risk his head on the system, provided the system is carried out." Just so! Provided there be no accidents! He admits that "of course the system has no check in itself on drunken or inefficient employés." That's exactly where the trouble lies. Such matters are not by any means "out of jurisdiction of the system," as G. T. imagines.

In the *Railroad Gazette* of Feb. 3 I stated my belief that collisions were too frequent, that escapes were too common, and that General Superintendents (not telegraph superintendents) did not know how many serious mistakes were being made, as most of them were corrected in time to avoid unhappy results. As yet no one has come forward to disprove my conclusion; not one has come forward to say "I have served on this road as despatcher or operator for years, and have not known any collision or wrong order given." Not one has said this. If any can say so let us hear from them.

I must not be understood as condemning despatchers. Whatever of their condemnation has appeared has come from their own ranks. I condemn a system which throws upon despatchers a weight too great for

any man to bear. If despatchers would only see it, they are the ones most interested in improving the system. A perfect despatcher must have a head so clear, a memory so perfect, a nerve so calm, an endurance so great, a knowledge of locality over every mile of his district so intimate, that he must be more than human—he must be godlike. Such perfection is not of earth. Alas! when we have, as we supposed, secured this infallible regent, behold! those in whom he puts his trust are weak, imperfect mortals, and he has no means of correcting their tendencies to error. His perfection is powerless to save.

Operators and despatchers are not the men responsible for the system, and are probably not able to effect any improvement. The matter lies in the hands of General Superintendents; but operators and despatchers can help to place before the superintendents the real state of the case.

Let us hear from your correspondents accounts for the past five years of all collisions on their roads, giving the alleged causes of such, and the estimated damage. Such statements need not mention names, or any particulars that would compromise the interests of the road. Also, let us hear from those who can say that during the five years no collision has happened, and not more than twenty errors made in train orders. Such statements should give the length of road and number of trains each way daily.

HINDOO.

Tyrannical Management of the Ladies' Department at the Western Union Office, 145 Broadway.

TO THE EDITOR OF THE TELEGRAPHER.

THE Western Union Telegraph Company—or some of its officers at least—have claimed a great deal of credit on the score of employing ladies to operate the lines in the "City Department," at 145 Broadway, as well as for their cooperation with Mr. Cooper in establishing a free school of telegraphy at the Cooper Institute, and I think it is about time that a little light was thrown on the true state of affairs in that office. I have observed that THE TELEGRAPHER has always, when opportunity offered, shown itself a friend to the lady operators, and therefore have ventured to send you this communication, hoping that it may have some effect in ameliorating the condition of the "white slaves" at 145 Broadway. I have been through the mill, and can speak feelingly on the subject. What do you think of the following, as a set of rules for the government of respectable and intelligent young ladies? If the institution was intended as a prison or a reformatory they might possibly be appropriate. I copy them *verbatim*:

"RULES OF CITY DEPARTMENT."

- "1. Reading books and newspapers prohibited.
- "2. Letters and mail matter to be received in the regular way provided by the Company. All other written communications to be received by the Time-keeper and delivered at five o'clock, P. M., after having been inspected by the Manager.
- "3. Forwarding notes or messages to employés, or other parties in the building or elsewhere, to be submitted to L. H. Snow (Manager) for approval.
- "4. Packages or lunches to be received by the Time-keeper for delivery at five o'clock.
- "5. Callers not admitted. Operators wishing to see their friends may do so in the Superintendent's office on application to the Manager. Special permission given if considered proper.
- "6. All conversation in the room or over the lines strictly forbidden.
- "7. Any operator corresponding, meeting, or calling at any gentleman's office, shall forfeit her position immediately.

"Approved, "L. H. SNOW, Manager."

It is only necessary to add that the above rules, together with other unwritten ones, still more tyrannical and arbitrary, are enforced with relentless severity. It will be noticed that operators are condemned to perpetual silence; that they are kept on duty from 8 A. M. to 5 P. M. without being allowed to eat anything; that no letters, telegrams or communications, however urgent or important, are allowed to reach them during the day; and that the mere recognition of a male acquaintance, even outside the office, and out of business hours, is punished with instant dismissal, as it has been in numerous instances. "A corps of spies and detectives are employed to watch the ladies passing to and from their homes, and any infraction of the code is reported and rigorously punished. In case of time lost, by sickness or otherwise, a proportionate amount is deducted from the operator's salary. A few months since one operator's wages were "docked" for attending the funeral of her father, who had been in the Company's employ for twenty years. The operators are kept in an absolute state of terrorism. Dogged by spies, they dare not make their wrongs known. The venerable metropolitan Superintendent is, if anything, in a more pitiable state of subjection than the operators. Any complaint to him of ill treatment, however outrageous, merely elicits the response, "We must sustain our Manager." For certain reasons he dare not do otherwise, however well disposed he might be. This Manager boasts—and the facts prove her assertions to be true—there is no higher authority on the Western Union lines than myself!

Mr. Editor, if you wish to ventilate this subject, I can put you in the way of obtaining facts which the

parties implicated cannot deny, and which will show up, in its true colors, the manner in which this combination of the penitentiary, poor-house and reform school is actually carried on, and why? If you can do anything to alleviate the unfortunate condition of those miserable drudges, I think you ought to.

ONE WHO HAS BEEN THERE.

The Snow Blockade.—Appreciation of The Telegrapher.—The Telegraph and Telegraphers of the Pacific Coast, etc.

SAN FRANCISCO, CAL., March 8.

TO THE EDITOR OF THE TELEGRAPHER.

THE snow blockade on the Union Pacific Railroad has seriously interfered with our regular receipt of THE TELEGRAPHER, and your numerous subscribers on the Pacific Coast were much rejoiced when the embargo was raised and five numbers of our paper came to hand. It affords me much pleasure to send you the enclosed substantial evidence of the continued approval and appreciation of the fraternity, and I expect in a few days to follow it up with another list and remittance. The many friends on this coast of the faithful organ of the telegraphic profession are much pleased with the evident prosperity of THE TELEGRAPHER, and you may rely upon the support of the fraternity west of the Rocky Mountains in your independent course.

There is but little of interest telegraphically to communicate just now. During the snow blockade the telegraph lines worked with much regularity, and we were not, therefore, entirely shut out from communication with the outside world. You may be sure that telegraphic communication was fully appreciated during this time by the people here.

The Atlantic and Pacific Telegraph Company have moved their main office in this city two doors above its former location on California street. The business of this company is rapidly increasing, and had outgrown the accommodation afforded by their former office. Their new quarters are much larger and afford more comfortable accommodation, and I understand that their business has more than doubled since removal—an excellent indication of their prosperity.

Mr. James Gamble, Superintendent of the Western Union Telegraph Company, has just recovered from a severe attack of rheumatism, which confined him to his room for some days. When he reappeared at the office he was somewhat reduced in flesh, and had evidently suffered severely.

Much surprise was expressed by the fraternity generally on the coast, on learning that Mr. E. H. Reese, one of the prominent strikers, had resumed work in the Western Union office in this city. It will be remembered that he and Mr. L. N. Jacobs were the two black sheep who were placed on the blackest of the black lists, and were strongly condemned by the Western Union officials. His restoration, however, has gained for Mr. Gamble many friends, who recognize the liberality displayed, and confirms the statement made by one of your correspondents, that Mr. Gamble, alone, is not so very hard to get along with. Continue your present course, Mr G. You have taken a step in the right direction.

I am sorry to chronicle the death of Mr. J. M. Hubbard, a well known "Telegraph man." By his decease the operators have lost a good friend. Ever considerate of their wants he was respected and loved by all of the fraternity who knew him. I understand he was one of the leading spirits of the first opposition company ever organized on this coast, which was consolidated under the name of the "California State Telegraph Company." He was also Superintendent of the Atlantic and Pacific States Telegraph Company, which was bought up by the Western Union Company some two years since.

Mr. William Lundberg, formerly well known as manufacturer of and dealer in electrical and telegraphic instruments and supplies in this city, having sold all his interest in his shop to the Electrical Maintenance and Construction Company, left last month for Japan, to see what that country offers. He leaves here many friends, whose good wishes for his success and prosperity go with him. The Electrical and Maintenance Company are said to be doing a good business.

ALCATRAZ.

A Telegraphers' Strike.

PHILADELPHIA, PA., March 20.

TO THE EDITOR OF THE TELEGRAPHER.

THERE WAS an unusual scene in the office of the Pacific and Atlantic Telegraph Company here, at No. 303 Chestnut, street yesterday. The operators employed at this office have been paid monthly, and have always been promptly paid by the Manager, Mr. S. B. Rumsey. The Western Union Company pay the operators employed by them here one third of their salaries on the 15th of each month. The Manager of the P. and A. office has been accustomed to make such payments on account of salaries during the month as was convenient, but not as a matter of right or in any specified amount.

The operators requested of Mr. Rumsey that he would adopt a similar rule to that of the W. U. Co., which he declined to do, but said he would pay them such amount as he could conveniently spare.

It seems that this month not much could be paid, and the operators clubbed together and yesterday de-

manded payment of one third of the amount of their salaries for the month, which was declined by the Manager, when they struck, thinking to compel a compliance with their demands. Accordingly, at 10 o'clock A. M., five of the operators, Messrs. Gove, Lyndall, Taylor, Dillon and Ruddock, put on their hats and coats and left the office, leaving the P. and A. Company in the lurch. There remained in the office only the chief operator, Mr. J. T. Shaine.

After the strikers had left, Mr. Rumsey called in operators from one of his branch offices, and closed up two others to bring force to the main office. This enabled him to get along until four o'clock, P. M., when operators from Harrisburg and Lancaster arrived to take their places. Boys were sent to the closed branch offices to sub-work them until their operators were relieved from duty at the main office.

The matter was referred to Mr. McCargo, the General Supt., by the Manager, who at once ordered the dismissal of the strikers. They were accordingly discharged this morning, and a new set of operators have been employed. Matters are to-day resuming the regular routine, and things are moving along finely.

Personals.

Communication is desired with some of the relatives of the late EDWARD BARNES, who several years ago invented the "Columbian Instrument." Any reader of THE TELEGRAPHER knowing the address of the family will oblige by communicating the same to JOHN HOWARD, care of the Editor.

Mr. CHAS. DRAKE has been transferred from the Ionia, Mich., to the Detroit, Mich., office of the Detroit, Lansing and Lake Michigan R. R.

Miss L. A. TURNER, of the Shenandoah, Pa., office of the P. R. and P. Telegraph, has gone home to Danbury, Conn., on a brief vacation.

Mr. WILLIAM H. HALL, who has been manager and electrician of the Cuban cable at Key West, since the opening of the line in 1867 until recently, has accepted the position of manager of the Brooklyn and New York offices of the Pacific and Atlantic Telegraph Company, and enters upon his duties to-morrow, *vice* Mr. M. K. THOMPSON, removed.

Mr. J. McDERMOTT has resigned his position with the Southern and Atlantic Telegraph Co. at Richmond, Va.

The Telegraph.

By Cable.

THE CUBA AND MEXICO TELEGRAPH CABLE.

HAVANA, March 15.—The telegraph cable between Cuba and Mexico will probably be laid in April next.

Foreign Telegraphic Notes.

A MEMBER of the Upper House of the Austrian Parliament has presented a plan for laying a cable between Trieste and Alexandria. The Austrian Government has already made preparations for connecting by cable the fortified seaport of Ragusa, in Dalmatia, with Malta and Corfu.

The total number of messages forwarded from Postal Telegraph Stations in the United Kingdom, during the week ending the 24th February, 1872, was 243,016—an increase over the corresponding week last year of 51,513.

At the annual meeting of the Indo-European Telegraph Company, held in London Feb. 28, the chairman said the statement of the accounts was not so favorable as the directors could wish, but at the same time they were satisfactory, considering that twelve months ago the prospects of the company were rather gloomy. At present their prospects looked exceedingly favorable. Twelve months ago the Company had to create their traffic to India, to compete with rival companies, and to divide with them the traffic, such as it was. Notwithstanding this, it had increased by £20,000, although their capital was only £425,000. Considerable reduction had been made in the expenditure. Everything had been done by the Company to keep out of debt, and if the directors did not declare a dividend he might say that one had been fairly earned. With a view to a further dividend, the directors proposed to repeal some of the articles of association providing for a reserve fund of £10,000 a year previous to a dividend, to recoup the capital at the expiration of twenty-five years. There was no necessity for a reserve fund in the case of land lines, which were kept in repair day by day out of the revenue. He preferred a present dividend to a fragment at some indefinite time.

The report states that the receipts for the year 1871 amounted to £49,031, as against £25,268 for the year 1870. The expenditure, including £12,000 claimed by the General Post-office, amounted to £43,747—leaving a balance of £5,284; the expenditure on commercial account amounted for the 12 months to £14,601, as against £15,102 for the 11 months of 1870. Out of the balance of the year's transactions, amounting to £5,284, they had to pay towards the liquidation of the Persian debt £3,609—thus leaving a balance of £1,675. It was proposed to write off the remainder of the pre-

liminary expenses, amounting to £1,160, and to carry the balance of £615 to the credit of the current year. The capital account showed that £441,399 had been expended.

The directors of the Great Northern Telegraph Company have notified that the cable between Shanghai and Hong Kong having been restored, messages can be forwarded as usual to Hong Kong by the company's lines. A Copenhagen correspondent telegraphs, under date of Feb. 23, 8.24 P. M., that the general meeting of this company voted almost unanimously the amalgamation with the China and Japan Extension Company. The capital of the new company is one million and a half sterling.

Mr. Francis S. Dutton, the Agent-General for South Australia, states that on the 20th inst. he received telegrams from the Government of South Australia in advance of the February mail. The land line is finished to the north end of section E, 1,200 miles. The working party from this northern section have effected a junction with Mr. Patterson's working party, who are working from the north to the south. With such a large working force on the ground the gap of 300 miles will soon be completed. The horse express service is probably by this time nearly ready to begin work, so that, making prudent allowance for any further accidents, we may now at any hour receive telegraphic advice from the capitals of the Australian colonies only four or five days old.

The telegraph between Buenos Ayres and the Pacific was inaugurated as far as Mendoza on the 7th of February last.

Mr. Wilson, member of the Commissao da Praca, of Para, and Manager of the Gas Company, has proposed to the President of the Province of Para to lay a telegraphic cable between Para and St. Thomas, thus joining Para with the European and North American lines, on condition of a small subsidy from the public purse. It was to be laid before the Provisional Assembly which met in February.

Telegraphic Brevities.

A SPECIAL meeting of the stockholders of the Western Union Telegraph Company is to be held at the executive office of the company in this city, April 3d, 1872, at one o'clock P. M., for the purpose of authorizing the issue of bonds of the company to an amount not exceeding fifteen hundred thousand dollars, to provide funds for the purchase of the property on the corner of Broadway and Dey street, in this city, and for the erection of suitable buildings thereon. The transfer books will be closed from the 23d inst. to April 4th.

The Pennsylvania Central Railroad have built a new telegraph line over the road from Lewistown to Sunbury, Pa. There will be eight offices on this line, which is fifty-four miles in length. The road is a new one, just constructed, and gives a short cut to the West. Mr. C. L. Bretz, formerly an operator in the Harrisburg, Pa., office, has been appointed superintendent of telegraph and train despatcher.

On Monday last the House Committee of Ways and Means at Washington agreed to fix the tariff on imported telegraph insulators at 25 per cent. *ad valorem*, and insulated wires used for the same purposes, covered with gutta percha, at $\frac{1}{4}$ of a cent per pound. Submarine cable was fixed at 35 per cent. *ad valorem*.

Youthful scamps in Alleghany City, Pa., have an annoying habit of stopping the key-holes in the fire alarm boxes with mud, and also covering the plate upon which are directions where the key may be obtained.

A New Dodge in Advertising.

ONE of the most ingenious means of advertising we have met with is the following: A thin buff envelope, printed and directed as though it covered a telegraphic despatch, contains a slip which looks like a printed telegraphic despatch. We read thereon that a certain tea company has the celebrated—tea, pure and delicious, for sale in pound packages, etc. Of course, being pleased at the trick, it is preserved and shown to one's friends, and so one circular is seen by many, as intended by the advertisers, who laugh over it, and pronounce it a clever trick, as was also anticipated. The genius who devised this dodge can go up to the head of the class.

THERE seems to be no limit to the ingenuity of Connecticut Yankees. A farmer in that State has just contrived an infernal machine for the destruction of crows, in the shape of a kernel of corn, which explodes on being picked up by the unsuspecting bird, and it blows his head off without the slightest warning.

Herr Kirsch suggests that in writing figures a separation of the millions should be made and indicated by two commas. Thus he writes 132,54, instead of 132,540,000.

The height of impudence—taking shelter from the rain in an umbrella store.

It is now proposed to put nitro-glycerine into trunks, to warn baggage men against handling them roughly,

Miscellaneous.

AN IMMENSE ELECTRIC MACHINE.—A Holt electric machine—one of the largest, and, probably, most effective in the world—has just been completed for the University of Pennsylvania. The revolving plate is 36 inches in diameter, and the machine is capable of giving an 18 inch spark, which will pierce a plate of glass $\frac{3}{4}$ inches thick.

New Patents.

For the week ending March 5, 1872, and each bearing that date.

No. 124,199.—TELEGRAPH INSULATOR. Moses G. Farmer, Salem, Mass.

An insulator for telegraph wires, formed of vulcanite, in the manner described and represented, and supporting the ordinary wire carrying hook, as and for the purpose set forth.

No. 124,200.—TELEGRAPH INSULATOR. Moses G. Farmer, Salem, Mass.

A telegraphic insulator composed of earthen, stone, or biscuit ware, or other suitable or porous and plastic material, moulded, threaded, and prepared substantially in the form and manner described, and saturated with the insulating compound specified, or other suitable insulating mixture, for the purposes set forth.

No. 124,201.—COMPOUND FOR INSULATING TELEGRAPH WIRES, &c. Moses G. Farmer, Salem, Mass.

A compound formed of the ingredients and in the manner specified, for application to telegraphic insulators, for the purpose of increasing their insulating power, as set forth.

No. 124,216.—MAGNETO-ELECTRIC BATTERY FOR FIRING FUSES, &c. Butler G. Noble, Brooklyn, N. Y.

1. The magneto battery herein described, constructed and operated substantially as herein set forth.
2. The combination of iron cored helices fixed to the poles of a magnet with a sliding core, constructed and used substantially as and for the purpose herein set forth.

No. 124,317.—ELECTRIC TORCH FOR LIGHTING GAS, &c. William W. Batchelder, New York.

1. The combination of the fixed and movable flat generating surfaces E and J with the handle A, conductor N, and lighter P, essentially as described.
2. A portable electric torch, in which the generating surfaces are separated and connected by the axial movement of one upon its stem toward the other, essentially as described.
3. The combination of the metallic connections O F with the generating surfaces E J, so constructed and arranged that the shell F shall have a separating movement in advance of and independent of the rubber disk J, essentially as and for the purpose described.
4. The combination and arrangement of the inner and outer sleeves G and K, or their equivalent, with their respective springs L and M and the thumb-piece G', essentially as described.
5. In an electric torch I claim the lighter P, arranged on one side of the insulated and O of the conductor N, for the purpose of protecting the same from both heat and matter, essentially as described.
6. In an electric torch I claim the combination, with the lighter P thereof, of a suitable device for connecting the lighter with the burner below an insulated tip, essentially as described.
7. In an electric torch I claim the conductor N, made adjustable, essentially as and for the purpose described.
8. In an electric torch I claim the combination of the fixed and movable generating surfaces E and J, the handle A, adjustable conductor N, insulated end O, laterally projecting lighter P, and burner connecting device S; the several parts being constructed, arranged and operating essentially as described.

Recent British Patents.

No. 1,998.—E. O. W. Whitehouse, Roslyn Hill House, Hampstead, Middlesex. RECEIVING AND RECORDING INSTRUMENTS FOR ELECTRIC TELEGRAPHS, AND IN THE UTILIZATION OF EARTH CURRENTS. Dated July 29, 1871.

1. The uses of new and improved forms of magnet, and code for telegraphic, recording or receiving instruments. 2. The use of magnetism or other metal, of light specific gravity and high specific conductivity, for the conductors for moving coils. 3. The use of glycerine and water with aniline or fluid dye, as ink for receiving telegraphic instruments. 4. The utilization of earth currents at receiving stations, so as by means of accurate self-adjusting compensation to eliminate the embarrassment usually arising therefrom, and to ensure perfect working.

No. 1,916.—R. Herring, St. Mary's road, Canonbury, Middlesex. RECORDING OR PRINTING TELEGRAPHS. Dated July 21, 1871.

This consists of improvements in printing or recording telegraphic instruments, provided with two styles, by an improved mode of operating the feed rollers for the paper on which the signals or marks are made.

No. 1,624.—A. Grestlavi, Euston road, Middlesex. ATMOSPHERIC TELEGRAPH APPARATUS. Dated June 20, 1870. Improvements on Patent No. 1855, of 1870.

The apparatus comprises a reservoir of condensed air, with pump, communicating by a pipe with another station. The passage of air is regulated by a cock and plug or cylinder, operated by a lever handle, and having a port or passage made to coincide with a tube when a jet of air is to be forced through by the transmitting apparatus, which consists of an alphabetical dial and index, having a ratchet wheel operated by the lever handle, pawl and plug, and allowing an escape of air to give the signal. The receiving instrument is provided with a similar dial, ratchet and index, moved round one tooth by a lever operated by the valve on the air passing through. For short distances the signals are transmitted by a slight compression of the air in the tubes, acting on a diaphragm at the receiving instrument. For ship signaling words of command are substituted for letters on the dial, the ratchets being arranged to suit.

No. 1,535.—W. A. Lyttle, The Grove, Hammermith, Middlesex. VOLTAIC BATTERIES. Dated June 10, 1871.

1. Any number of pairs of voltaic elements may be contained in the same cell provided two insulated cells are used, and that when the poles are not in circuit there shall be no voltaic connection between the positive and negative elements of the same cell. 2. The employment of graphite, binoxide of manganese and zinc as the solid constituents of a battery, with the charge of sal ammoniac contained in the graphite cell only, and not in the zinc, as in the Leclanché battery. 3. The coating of wooden or other joined battery boxes with a woven water-proof fabric.

Married.

GOODWIN—WARREN.—At Buffalo, N. Y., Tuesday evening, March 12th, at the residence of the bride's father, by the Rev. Wm. Shelton, D. D., CHARLES L. GOODWIN, Superintendent of the Atlantic and Pacific Telegraph Company, and ISABEL, second daughter of M. M. WARREN, all of that city.

THE TELEGRAPHIC

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.

FRANK L. POPE, Associate Editor.

SATURDAY, MARCH 23, 1872.

The American System of Train Despatching.

As a very large number of our readers are interested in the discussion of this important subject, which is now being carried on in our own columns as well as those of our able contemporary, the *Railroad Gazette*, we have endeavored for some weeks to find room to print a second communication from "Hindoo," which appeared in the *Gazette* of March 2d. Being unable, however, to do this, we will endeavor to give a brief summary of his argument, in order that the matter may be thoroughly canvassed. "Hindoo" takes the position that, in the present system, although there are some unimportant checks, "the most delicate movements of the machinery are not protected from derangement." In regard to the repetition of train orders for the despatcher's "O. K.," he considers that the risk of a misunderstanding lies between the two operators and nowhere else. He says: "If the receiving operator, after entering the message in his book, telegraphs back, word for word, what he has written, there can be no misunderstanding. The receiver then prepares a copy, which he signs with his own name; the conductor comes along, compares his copy with the book, signs the book at the foot of the message, and goes off without delay. Here is an arrangement that causes no detention, and is so simple that there is small chance of its not being carried out. What is the practice of the other arrangement? The conductor writes, as his understanding, an exact copy of the order. Where is the check? It is a farce, and one that is not always played out." He further contends, with much show of reason, that there is no necessity for concluding every train order with "Ans. 31." The despatcher cannot prevent the conductor's leaving without having gone through the usual forms. If the despatcher should forget at any time to affix the formula, and the conductor went without having the understanding telegraphed and acknowledged, and an accident happened, the responsibility would be transferred from the conductor, where it should rest, to the despatcher, where it should not. From the repetition of the formula, "Ans. 31," with each order, the legitimate inference is that when it is not given no action is required. He then proceeds to give some examples of the working of the rules under certain conditions. For instance: "Conductors, when directed by an order of this kind, must not leave a (the?) station without having the same in their possession. Nothing is said about the engineer." "Hindoo" gives a suppositious example of what might happen under this rule, but the next number of the *Gazette* contains an actual one, which is more instructive. "On the 13th a passenger train on the Wisconsin Division of the Chicago and Northwestern Railway ran into the head of a freight train near Evansville, Wis. * * * The collision was the result of a disobedience of positive orders from the train despatcher to hold the passenger train at Evansville till the freight passed. 'The conductor forgot.'"

Another example (*vide* "an Eastern railway," in our last issue). "Despatcher telegraphs to conductor, Express No. 1, North: 'I have given freight No. 2, bound South, until 10.40 A. M. to make B for you. Do not pass that station until that time, unless it has arrived, then go by rule.' Ans. 31. Conductor obeys this order literally. No. 2 left A in good time to make A by 10.40, but engine becomes disabled, or leaves track, or sticks on a grade. At 10.40 No. 2 not being in sight, No. 1, according to order, starts and 'goes by rule' into No. 2."

Again: "The order must always be issued first to the train having the right of road, &c.' But the despatcher momentarily forgets the right of way, and gives the right to the opposing train, then cannot get

the other operator in time to hold the train. What happens?"

"Hindoo" has all along contended that the system employed in India is absolutely safe, even against unintentional error, while the American system lays the safety of life and property frequently, and at the most critical moments, entirely in the hands of a single individual, who cannot be infallible.

The same writer makes the eminently sensible suggestion, in regard to "order signals," that the signal board should be so weighted as always to be against the trains, except when taken off to permit their passage, and not taken off until the engineers whistle for it, and that the latter should be required to report every case of its being found off before their whistle, thus compelling operators to be on hand and alert during the passage of trains, and preventing them from neglecting to turn on the signal when ordered to hold a train. This arrangement has been used for two or three years on the New York and Philadelphia road, and is, beyond question, much safer than that in general use on other roads, and ought to be adopted everywhere.

The rules for the management of single track railroads in India, referred to by the writer in the *Gazette*, are as follows:

First. No engine, with or without a train, shall be moved from any station unless the engine man has in his possession a telegram showing that he can proceed to the "next" station, countersigned by the officer in charge of the station he is about to leave. The engine man must receive this message from no one but the guard of his train. The telegram must be given by the station master himself to the guard. Before handing it to the engine man the guard must satisfy himself that it is correct. It must not be given to the engine man until the guard has received permission to start.

Second. When the officer in charge of a station has received notice that a train has left the "last" station, he will cause a bell to be rung to warn all the servants of the company. He will then, and not before, apply to the "next" station for a "line clear" message.

Third. A "line clear" message is a telegram from one station master to another, showing either that no train has left the sender's station for the receiver's, or that, if a train has left, the line will be clear upon the arrival of that train at the receiver's station. There are three sorts of messages:

1. Simple "line clear"—when no train is on the line.
2. "Line clear to follow"—when one train may follow another.

3. "Line clear on arrival"—when a "down" train may proceed after arrival of an "up" train, or vice versa.

Fourth. When the "line clear" message has been received the station master will endorse it, and, if the time be up, will hand it to the guard, authorizing him to proceed.

Fifth. When a "line clear to follow" has been received the station master must write across it the time of departure of the preceding train, thus, "Guard and driver of No. — to proceed cautiously. No. — left this at 9.45."

Sixth. When a "line clear" cannot be obtained from the "next" station, the station master may apply to the second station. If no "line clear" can be obtained, owing to absence of or interruption to the telegraphic communication, the guard and driver may, under arrangement with the station master, and believing the line before them to be clear, proceed cautiously, at a rate not exceeding ten miles per hour on a straight line, or five miles per hour in a cutting or curve, repeatedly sounding the whistle.

Seventh. In all messages concerning trains the train must be distinctly described thus, "No. 1, up, goods," "No. 2, down, passenger," "No. 1, up, mixed." For each train there must be a separate "inquiry," etc., and a separate "line clear." Each "inquiry" must mention what sort of "line clear" is required. Thus with two trains, running with a short interval in the same direction, the station master's "inquiry" for the second train would be, "Is line clear for No. — to follow No. —?" If a train has left the "next" station the "inquiry" would be, "Will line be clear for No. — on arrival of No. —?"

Eighth. As soon as any engine or train has left, the officer in charge of the station shall enter in a book, called the "Trains Departure Book," the time the train started and the time the operator was advised, which entry the signaler shall attest. The operator shall then advise the station for which the train has started. The operator receiving the message will immediately enter in a book, called the "Trains Notice Book," the time of departure from the "last" station, the time the message was received, and the time the notice is given to station master. On receipt of the notice the station master will sign, in the column provided for the purpose, and will enter the time of receiving the notice, and then cause the bell to be rung, etc. (See section 2.)

Ninth. No engine or train shall be allowed to leave one station for another until at least ten minutes has elapsed from the departure of the last preceding train. In the case of a passenger train following any other train, twenty minutes must be the least interval allowed.

Tenth. Trains will be started at all stations by the guards only, after permission obtained from the station master. The starting signal will be a green flag by day and a green light by night, and not in any case by wave of hand or handkerchief.

We have given a good deal of space to this matter, in order to invite discussion. The subject is of vital importance, and we hope our numerous readers among the railroad telegraphers will shed as much light on it as possible. From the evidence thus far, it is certain that the system, as worked on some roads at least, is open to some serious objections. If this discussion should lead to an improvement in these points great good will have been accomplished. If any one can give examples of accidents which have occurred "by rule," they will be doing great service, for these will show wherein the system is imperfect, and the remedy will soon be suggested by some of our intelligent and wide-awake railroad telegraphers. All these things will tend to the establishment of a complete, safe, and uniform system—a consummation much to be desired.

An Interesting and Valuable Collection.

Mr. JOHN HORN, Manager of the Western Union Stock Exchange office in this city, has for some time been engaged in making a unique and interesting collection of portraits, illustrative of the history of electrical and telegraphic discovery and invention, from the earliest date to the present time. His collection, to which he has devoted much time, care and labor, consists of some two hundred and fifty portraits, many of them very rare and curious, comprising mezzotints, wood and steel engravings, proofs on India paper lined engravings, photo-lithographs, photographs, lithographs, etc.

All of these portraits have been uniformly mounted, quarto size, and are inlaid. The whole number are to make five handsomely bound volumes—each volume to contain fifty portraits, and each portrait to be accompanied with a biographical sketch of the original. Many of the portraits have original autographs attached to them. Each volume also contains a number of original letters, of historic value.

The bringing together of this interesting collection has been a labor of love with Mr. HORN, who has been for years engaged in the work. The discoveries in electricity and the invention of the electric telegraph are not the work of any one man, nation or country, and therefore the portraits necessarily have been obtained from all quarters of the globe. Among the subjects we find many nationalities represented: THALES, the Greek Philosopher; VOLTA, the Italian; BREGUET, of France; GAUSS, the German; WHEATSTONE, the Englishman; BAIN, the Scotchman; GUERICKE, of Prussia; JACOBI, of Russia; ORSTED, the Dane; MORSE, the American, and others. The likenesses of philosophers, scientists and discoverers who flourished in the sixteenth, seventeenth, eighteenth and nineteenth centuries, are brought together in this unique collection.

The American section of the collection is especially rich and complete, and is very justly regarded with much pride by Mr. HORN—comprising, as it does, the inventor, members of Congress who voted for the original appropriation, the President, original stockholders, author, superintendent, editor, operator, etc., etc.

Telegraph Wire and Insulators.

THE improved insulator advertised by Mr. CHARLES T. CHESTER in our columns seems to present as nearly a perfect insulating arrangement as is possible with glass. A recent improvement upon this insulator adds very much to its insulating properties. In casting the insulator four projections are left, with raised teeth, which cut a thread upon the pin as it is forced into the socket. By this means the surface contact between the glass and pin is reduced two thirds without impairing the strength or durability of the insulator. Besides this a drip is cast which prevents to a considerable degree the collection of moisture in immediate contact with the pin. The CHESTER A 1 telegraph line wire has been favorably received, and is no doubt a superior article. Its uniformity is a decided recommendation.

Proposing by Telegraph.

In a certain village there resides a young man who became greatly infatuated with a fair maiden, daughter of an enterprising, prosperous merchant of the neighboring town. He conceived the notion, very suddenly, that "it is not good for man to be alone." So deeply was he convinced of the fact that he could not wait for the train to come along to interview the old gent and make his matrimonial proposals, but popped the question by telegraph as soon as the office was open in the morning. The operator carried the message to the residence of the gentleman, whom he found yet in bed. In reply to "What's wanting?" the telegraph man informed Mr. D—that Mr. So-and-so wanted his daughter. "Tell him he can have her," said the merchant. The answer was accordingly telegraphed, and the first train brought the swain to his adored, and the two were made one in a twinkling. The happy couple were off on a bridal tour by next express. Somebody said they went by telegraph.

A PARIS banker lately became a lunatic. He imagined himself a magnet. A few days ago, while in his office, talking very rationally with his wife and daughter, he suddenly jumped up, exclaiming, "I am attracted!" and dashed himself head foremost against a large iron safe. Unfortunately he struck the sharp corner, split his head and died instantly. Surely that kind of attraction does not belong to gravity.

16,000 MILES
OF
"JOHNSON'S" WIRE
USED BY THE
TELEGRAPHS OF THE UNITED STATES
DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
MANCHESTER, ENGLAND.

Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

TELEGRAPH LINES

OF ANY LENGTH FULLY EQUIPPED WITH

WIRE, INSULATORS, BATTERIES,
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Sole Agents for "Johnson's" Wire.
" " " American Compound Wire.
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TELEGRAPH APPARATUS.

WE INVITE THE ATTENTION OF
RAILROAD COMPANIES,

AND

PROPRIETORS OF PRIVATE LINES,

TO OUR

Magneto-Alphabetical
DIAL TELEGRAPH INSTRUMENTS,

which are in use on the POLICE TELEGRAPH and many PRIVATE LINES in Boston and vicinity.

They require no Battery, and are always ready for use, thus avoiding the expense, trouble and uncertainty attending any Instruments to which Batteries are necessary. They are easily worked, having a straight Key-board, with a key for each letter and figure; are much more rapid than any Printers, and work well on LONG or SHORT Lines.

They are the BEST Instruments for RAILROAD COMPANIES or PRIVATE LINES that have been produced—as Conductors, Engineers, Station Masters and others can telegraph by them rapidly in ROMAN LETTERS.

We also manufacture PRINTING TELEGRAPH INSTRUMENTS, which are the most CORRECT and RELIABLE in use.

As the Type-wheel is adjusted instantly after printing each letter, no mistake can occur, except through the neglect of the operator, and they are as RAPID as any other SINGLE WIRE Printing Instruments in use.

GEORGE L. ANDERS & CO.,
80 and 40 Hanover St., Boston, Mass.

MORSE REGISTERS FOR SALE.

We have for sale several MORSE REGISTERS, secondhand, but warranted to be in first working order.

Will be sold cheap for cash, if applied for soon.

F. L. POPE & Co.,
P. O. Box 6010, 78 & 80 Broadway.

AMERICAN FIRE ALARM AND
POLICE TELEGRAPH.

GAMEWELL & CO., Proprietors,

104 CENTRE STREET, NEW YORK.

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General Agent and Superintendent.

L. B. FIRMAN, Chicago, Ill.,

General Agent for the West and North West.

J. R. DOWELL, Richmond, Va.,

Special Agent for Virginia and North Carolina.

J. A. BRENNER, Augusta, Ga.,

Special Agent for Georgia and South Carolina.

L. M. MONROE, New Canaan, Conn.,

Special Agent for New England.

THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

Albany, N. Y.,
Alleghany, Pa.,
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Buffalo, N. Y.,
Baltimore, Md.,
Chicago, Ill.,
Cincinnati, Ohio,
Columbus, Ohio,
Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
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New Bedford, Mass.,
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Toledo, Ohio,
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The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM
AND
POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original FARMER & CHANNING PATENTS, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

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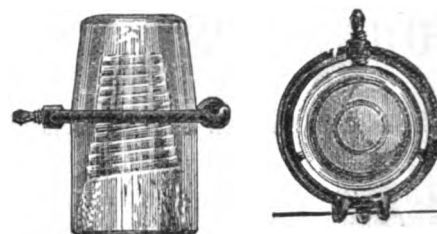
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2d.—The wire to be highly annealed and very soft and pliable, and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be cooled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

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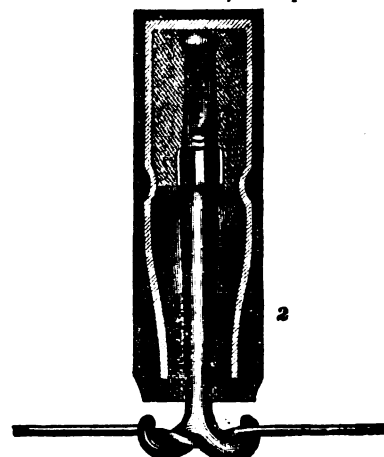
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The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 32.

New York, Saturday, March 30, 1872.

Whole No. 298

[From the Railroad Gazette].

Train Despatching on American Railroads.—A New System Proposed.

By "HINDOO."

SEVERAL correspondents in THE TELEGRAPHER, as well as in the *Railroad Gazette*, especially the Superintendent of an extended system of railroad telegraphs mentioned in the *Gazette* of March 2, having stated that they failed to see the safety of the Indian system of train despatching, some further remarks may not be undesirable:

The safety of the Indian system lies in the precautions—

First. That no engine is permitted to leave any station unless the driver has in his possession written permission from the master of the station to which the train is about to move.

Second. That the written permission handed to the driver as his authority for starting, shows distinctly the state of the road he is about to travel—that is to say, whether he is to start after arrival of one or more opposing trains or engines, or if he is to follow a train, in which case the time of its departure and its class is stated, so that he has some idea of when he might expect to overtake it.

Third. That the written permission to start cannot reach the hands of the driver until it has been scrutinized by three persons independent of the sender, viz., the two operators and the receiving agent, each of whom being perfectly acquainted with the state of the road, is able to detect any error.

Fourth. The station master asking permission for a train to leave his station has to mention the state of the road. Thus, if no train is on the line, he says: "Is line clear for No. 10?" If an opposing train is on the line he says: "Will line be clear for No. 10 on arrival of No. 9?" If a preceding train is on the line, he asks: "Is line clear for No. 10 to follow No. 8?" The reply in accordance with the inquiry also mentions the train or trains on the road. Should the station master asking for a message forget that an opposing train is on the road, his operator would probably remember it; should they both forget it, the operator or station master at the other station would detect the error. That all four would make the same mistake is almost beyond the bounds of possibility. Even then there is a chance of avoiding a collision; for as soon as a train has left the station on either side a bell is rung to warn all switchmen, signalmen and people about the station, so that if a train commenced to move out of the yard some one knowing that another train was approaching would surely warn the driver and conductor.

Fifth. The integrity of the system is preserved by an inspection of the books, in which a copy is kept of every train message and of the message sheets, and by compelling the drivers and conductors individually to report every departure from the rules, making an omission to report such deviation involve the penalty of heavy fine for the first offence and loss of place for the second.

Now, if a butting collision under these rules is possible, I shall be glad if some of those interested will point out how it might occur.

The safety of the system is demonstrated irrefutably by the fact that butting collisions are unheard of there, albeit the intelligence and brain power of the working staff, including operators and the majority of station masters, are of the lowest order in the railway world.

The facility of moving trains by the Indian system is somewhat less than that of the American one, because in the former each train must stop at every station to get the train message, and every now and then trains will cluster at a station where the siding room is insufficient for their free passage. These objections are partially, and, as far as they can be, safely met by a combination of the systems. Such a combination system I have drawn up as follows:

RULES FOR MOVEMENT OF TRAINS.

1. Except as provided in rule 25, no engine shall leave any station unless the driver has in his possession a written permission (styled a train message) from the master of the station next in front of him. These messages are to be preserved and handed to foreman at the end of journey.

2. The train message shall specify the state (as re-

gards trains) of the road over which the engine is to travel, thus:

- "Line is clear for No. 10 Ex. freight."—*Indicating that no train is on the line.*
- "Line is clear for No. 10 Ex. freight to follow No. 8."—*Indicating that No. 8 is still on the road.*
- "Line will be clear for No. 10 Ex. freight on arrival of No. 9 accommodation."—*Indicating that an opposing train is on the road.*
- "Line will be clear for No. 10 Ex. freight on arrival of No. 7 freight and No. 9 accommodation."—*Indicating that two opposing trains are on the road.*

3. The train message must be from station master to station master.

4. The train message must be endorsed by the master of the station the engine is about to leave.

5. If an opposing train mentioned in message has arrived before the engine for which the message is, the station master will indorse thus: "No. 7 arrived at 5:10 P. M."

6. If train message mentions a preceding train, endorsing station master must give the time of its departure thus: "No. 8 left at 4 P. M."

7. The driver shall on no account receive this message from any one but his conductor.

8. The conductor must not give the train message to his driver until the time of starting. Possession of the message will be held conclusive evidence of the permission to start.

9. If an opposing train is mentioned in message, conductor must ascertain that such train has arrived before he gives the permission to start.

10. Drivers and conductors must report every infringement of the above rules, and of rules 24, 25 and 26, that comes to their notice. The conductor and driver accepting and running on any message knowing it to be incomplete will be dismissed. Any conductor or driver knowing of an infringement of the rules and not reporting the same in his journal will, for the first offence, be fined one week's pay, and on the second offence, will be dismissed.

11. As soon as an engine has left his station the station master will, in a book to be kept for that purpose in the telegraph office, and styled the "train departure book," enter the train number, description and time of departure, hand it to the operator, and see that he enters the time he receives the notification in the appropriate column.

12. As soon as the operator receives the notification mentioned in Rule 11, he will advise the "next" station and the train dispatcher.

13. The operator receiving the advice mentioned in Rule 12 will enter it in a book styled the "train notice book," and obtain the station master's signature and the time he receives the notice, in the appropriate columns.

14. As soon as a station master receives notice of a train's having left the "last" station, he will apply to the "next" station for a train message; such application being styled the "inquiry" and giving time of leaving last station. Thus: "Is line clear for No. 10 Ex. Frt. left A at 3 P. M."

15. There must be a separate "inquiry" and separate "message" for each train.

16. The "inquiry" must mention the state of the road as explained in Rule 2.

17. All messages regarding trains must be made in writing and in the appropriate books.

18. Station masters must obey instructions from the train dispatcher, who will, when necessary, stay the progress of trains or direct crossings to be made at certain stations to avoid jams and delays.

19. Messages from the dispatcher are to be entered in the "train's notice book," timed and signed for.

20. When station masters cannot agree as to the passing of a train, reference must be made to the dispatcher, whose decision shall be final. No excuse will be received for delay to train on this account.

21. Specific "train messages" must be given to iron trains, pilot engines, &c., which work between stations, and their return telegraphed to the other station.

22. When it is desired to cancel a train message the "inquiry" and reply must be thus:

Inquiry.—"Cancel my message for No. 10 Ex. Frt., and give me message for No. 9 Acoodn. left A at 2:45 p.m."

Reply.—"Your message for No. 10 Ex. Frt. is cancelled. Line is clear for No. 9 Acoodn."

23. At a place convenient to the telegraph office in every station there shall be a signal, styled the "main signal," in a conspicuous position, visible to all approaching trains. The board shall remain weighted against all trains until turned off to permit their passage.

24. The main signal shall not be turned off until the train is under the "distance semaphore," and must be turned on again as soon as the train has come to a stand in the station.

25. For express passenger trains timed not to stop, train messages must be obtained in the same manner as for other trains; but the driver and conductor will be guided by the main signal, stopping, if it be against them, passing on if it be turned off.

26. If after the driver has passed the main signal it be desired to stop him, the "distance semaphore" must be dropped, and for this both driver and conductor must keep a lookout as long as the semaphore remains in sight.

This code of rules is not complete without provisions regulating the intervals between trains; the right of way and the giving power to station masters, at terminal and other stations liable to be crowded, to control stations on either side for side-tracking trains. These matters are decided by locality, therefore no general rules can be framed. It might also be advisable at certain stations to ring bells when trains are approaching, so as to warn yardmen.

The above system will, I think, if thoroughly examined by competent persons, be found perfectly safe. It gives as much facility for running trains as is compatible with safety. No freight trains are allowed to run through stations, which arrangement does not in practice cause any serious loss of speed, and certainly benefits the yard machinery. The system is devised to afford the maximum degree of safety, and, therefore, regardless of expense, provides for an establishment of one operator and one station master continually on duty at each station along the line. Economical considerations might lead to a reduction of the staff, perhaps, without seriously injuring the efficiency of the system; thus at some stations the operator and the station master might be one and the same person. If such were the case at every other station there would still be a very good check, as three persons would be interested in every message. Safety and efficiency must ever remain at feud with economy and speed. The proportion of each in every system will be measured by the foresight and prudence of the management. An error on the side of safety is far more likely to be economical in the long run than any amount of cheese paring or rash experiments with a lively trust in Providence.

Since writing the article on train despatching which appeared in the *Gazette* of February 3, I have received abundant evidence of the truth of the statements therein made. Conversation with train dispatchers and with practical railroad men has satisfied me that the system hitherto in use has been crude and ill-digested. I am further prepared to say that the system has not even secured the dispatch that it professes. Many delays have occurred needlessly, and some that could not be avoided under those rules, but which need not have taken place, and would not, under the system I have here proposed.

HUMORS OF THE TELEGRAPH.—A Sacramento telegraph office is ridding itself of loafers. The *Bee* says: "A box running the full length of the front of the office on the outside has heretofore furnished a tempting seat for the habitues. This has been covered with zinc, which has been connected with the batteries that were contained in the box. A person sitting upon the box without touching his hands thereto will not feel the electricity, but if his hands drop on the box, or he puts them thereon to assist him in rising, he receives such a sudden and astonishing shock as sends him an unbelievable number of feet towards the lofty roof and the adjacent river. Any good day a person may see some of these unfortunates unexpectedly struck with this domesticated lightning, describing a fifty feet parabola in the air."

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Letter from L. G. Tilletson.—The English Railway Telegraphs.—An Interesting Assemblage of Telegraph Superintendents, etc.

LANGHAM HOTEL,
LONDON, Eng., March 11. }

TO THE EDITOR OF THE TELEGRAPHER.

WHEN I left New York it was my intention to have written to you before this time, but my time has been so constantly occupied since my arrival in England that it has hitherto been quite impossible for me to do so. You will have heard of our safe arrival in this country. We stopped one week in Manchester and it was time well spent.

On Wednesday last the Superintendents of the Railway Telegraph lines of the United Kingdom, or nearly all of them, met in that city to inspect the Wire Works of Messrs. Johnson and Nephew, upon whose invitation they were entertained at luncheon, where I had the pleasure of meeting them. The following are the names of the Superintendents who were present on the occasion:

Mr. G. G. Newman, Superintendent London and North Western Railway Telegraph, Manchester, England.

Mr. James Radcliffe, Superintendent of Great Northern Railway Telegraph, Retford, England.

Mr. Henry Saoh, Telegraph Engineer Great Eastern Railway, Bishopsgate Station, London.

Mr. Andrew S. Dunn, Telegraph Superintendent Caledonian Railway, Glasgow, Scotland.

Mr. Henry Moxon, Telegraph Superintendent Lancashire and Yorkshire Railway, Manchester, England.

Mr. F. Radall, Telegraph Superintendent London, Chatham and Dover Railway, Victoria Station, Pimlico, London, S. W.

Mr. C. Spagnolletti, Telegraph Superintendent Great Western Railway, Paddington, London, W.

Mr. Adolphus Graves, Telegraph Superintendent North Eastern Railway, York, England.

Mr. John Neale, Telegraph Superintendent North Stafford Railway, Stoke-on-Trent, England.

You can easily imagine what a gratification it was to me to meet these gentlemen. A jollier set of gentlemen it has seldom been my privilege to meet; and no better opportunity could have been afforded me to gain much valuable information in regard to railroad and telegraph matters in this country. The English and American systems of telegraphy were freely and fully discussed. I find that the needle telegraph is mostly used here on the railway telegraph lines, and it was difficult to convince these gentlemen that we could work the Morse System with 20 or 30 magnets in a 50 or 100 mile circuit. Much allowance must, however, be made for the difference in the climate here, as is generally known, the atmosphere is most of the time densely foggy and smoky.

One of the principal objections to the Morse System urged was that the operators, or clerks, as they are styled here, could not be kept from interfering with each other; and much of the time would be occupied in quarreling for the circuits. I assured them that American operators were too well trained and too sensible for this.

The construction of telegraph lines here is very much the same as in the United States, except that I must admit they appear to be more substantially built—stronger poles, deeper set, and almost every one braced. The posts are generally shorter than ours, but this is practicable on railways because they are better protected than with us.

A noticeable feature is the absence of air lines in cities—nearly all are under ground, and to "this complexion we must come."

The insulation is generally of porcelain. I may speak more fully in regard to insulation in a future communication.

You should see the underground railways here. They are a wonderful success, and prove conclusively to my mind that it is only a question of time (and I hope a short one) when New York must adopt them.

The sights which I see and the tales that I hear are wonderful and astounding, but the readers of THE TELEGRAPHER have had too many descriptions of all this to necessitate my repeating them, even if I had the time.

L. G. T.

Congress and the Telegraph.

WASHINGTON, D. C., March 27.

TO THE EDITOR OF THE TELEGRAPHER.

ALTHOUGH there has been nothing done in either House of Congress relative to telegraph matters since the date of my last communication, there has been some consideration in House Committees of matters which may possess slight interest telegraphically.

On Friday of last week, Gen. T. Van Buren, President of the American and East India Telegraph Company, appeared before the House Committee on For-

sign Affairs to demonstrate the good points of the scheme of that Company for connecting the Pacific and Asiatic coasts by cable. This company ask that the Government shall make the necessary surveys, lay the cable, and afterwards protect them from injury with the naval forces.

The House Committee on Appropriations this morning heard Gen. Myers, Chief Signal Officer of the Army, in support of his application for an increased appropriation for the storm signal service. The appropriation is insufficient to efficiently support the present operations of that service, much less to enable the extension of its operations and benefits which are urgently required. The committee this evening visited the Signal Department to witness the practical operation of the system, and will to-morrow hear further argument in favor of the increased appropriation, when Mr. Orton, the President of the Western Union Telegraph Company, will appear and advocate an increase of forty per cent. upon the rates of compensation now allowed the telegraph companies for the services rendered the Signal Department.

It is also understood that Postmaster-General Creswell will be heard in regard to his postal telegraph projects.

CAPITOL.

Interesting Description of the Great Wire Works of Johnson and Nephew, at Manchester, England.

MANCHESTER, Eng., March 2.

TO THE EDITOR OF THE TELEGRAPHER.

UPON the invitation of Mr. L. G. Tilletson, of your city, the writer, in company with him, to-day visited the celebrated and colossal Wire Works of Messrs. Richard Johnson and Nephew, of this city. Believing that a description of this great establishment would be interesting to your readers, I took a few notes by the way.

The works are situated in the township of Bradford, about one and a half miles from the city of Manchester. The first thing to attract our attention was the extensive Colliery, owned by the Messrs. Johnson, occupying in extent about five square miles and from which they derive the enormous supply of coal used in their works. This location was selected because the coal obtained here is more free from sulphur than in any other locality available, and in this it possesses a great advantage for the manufacture of wire. The Wire Works proper cover an area of six square acres. A branch of the Lancashire and Yorkshire Railroad connecting with all railroads in England runs immediately into their works, which brings the Pig Iron and other material and takes away the wire when completed. Upon entering their yard we are shown an immense stock of Pig Iron; the average quantity which they carry being about five thousand (5,000) tons, in the selection of which great care is exercised. Five thousand tons of No. 9 Wire would be equal to 30,000 miles.) Our attention was next called to the Puddling Furnaces of which there are twenty-five now in operation and more are soon to be added. The iron, after careful puddling, is placed under immense trip hammers, where each ball, containing several pigs, receives five hundred to one thousand strokes, until it is hammered into a block four inches square. The block is then rolled into a band about thirteen feet in length. A portion of the bars are rolled into 5 inch by ½ inch, and others into 3 by ½ inch; these are then cut up into lengths of about 20 inches. Four of the 5 inch bars are formed into a box containing the same number of the smaller ones; together these are heated and rolled into bars of twenty feet. These bars, after careful selection, are reheated in one of Siemens's Patent Generated Gas Furnaces; a workman grasps the bar with a pair of tongs, runs it through the furnace and then into Bedson's Patent Continuous Rolling Machine at white heat through fifteen pairs of rolls, each roller reducing the size of the rod until it emerges from the last a No. 4, 5, 6, 7 or 8 wire as may be desired, making a continuous length of about ½ of a mile without a single joint or weld. This is the operation by which we are supplied with the great lengths peculiar to Messrs. Johnson's wire. Mr. G. Bedson, the patentee, is the Manager of these Works. By this process the lengths may be made almost without limits; but those mentioned, it will readily be seen, are as great as would be required for telegraph purposes. In this machine the wire was rolled for the great Niagara Suspension Bridge, as also for the bridge over the Ohio river at Cincinnati—the length of the wires in the former being upwards of 800 yards each, No. 9 gauge.

The rods after cooling are removed to cleaning vats where, after being perfectly cleaned, they are dried and then drawn through steel dies to any desired size. After being jointed (and here the celebrated American joint is used) the wire is taken to the Galvanizing Works where it is passed through the furnace into the cleansing bath, thence to the zinc bath receiving its coating of Spelter, from which it is wound into coils ready for use; thus passing through the annealing, cleansing and galvanizing in one continuous process peculiar to these works. I may here remark that this establishment is able to produce a coil of galvanized wire from the Pig Iron in the space of fifteen hours which no other works in England can do in less than 2½ days.

Each coil of wire is then passed through the hands of an Inspector who thoroughly examines it, and each end is subjected to a test much more severe than it receives in its erection. Another test is applied by a

machine which at once exhibits the tensile strength of the wire and its capacity of elongation. The wire which we saw examined showed a breaking strain of fourteen hundred pounds, and an averaged elongation of 22 per cent.

We were introduced to the Government Inspector of the English P. O. Department, who is constantly employed at these works in testing the Johnson wire. The telegraphs of this country are all operated by the Post-office Department—and for his service Messrs. Johnson & Nephew have furnished nearly forty thousand miles of wire during the past two years.

We are thus satisfied of the justness of the claims made by these manufacturers regarding their long lengths, their superior galvanizing, and annealing facilities, and their ability to produce a greater amount of telegraph wire than any other establishment in the world—having been shown how it was done. Each separate process has its stationary engine, of which there are not less than thirty employed, ranging from 4 to 400 horse power. The variety of tools, machinery and implements in use here is astonishing and beyond description. Among other things we find an American pointing machine for pointing the ends of the wire.

For the edification of Telegraphers in the States who are not aware of the fact, I will state that the English Post-office Department use a No. 4 galvanized wire for all their important commercial circuits.

J. B.

The Firemen's Celebration.—An Expected Telegraphic Investigating Committee.

The P. and A. Lines, etc.

NEW ORLEANS, March 13.

TO THE EDITOR OF THE TELEGRAPHER.

WELL, another holiday—the 4th of March—has passed, and everybody is on the *qui vive* for the next one, the 17th inst., when the Hibernian Associations, numbering in the aggregate membership some two thousand in this city, will pay due respect to the memory and virtues of St. Patrick.

The 4th of March, the anniversary of our gallant firemen, passed off pleasantly, as it always does. The parade was magnificent, the trappings and decorations gorgeous, the music of the native and imported bands melodious, and the post prandial enjoyments glorious. New Orleans is very proud of her firemen, and with good and sufficient reason, too. I doubt if such another volunteer department, for efficiency and decorousness, can be found upon the face of the globe. Great fires are a thing unknown in the Crescent City for many years, and no paid fire department can work with more effect or with a heartier good will for the general good than do our volunteers. They feel well paid, however, in the consciousness of having willingly performed their arduous duties, and in the knowledge that they are the recognized pets of the entire community.

The weather has continued variable—the temperature of each zone, and even of the antipodes, being often represented during a single revolution of the earth. Business has been rather dull, and had it not been for our political cauldron with its boiling and bubbling, portentous of much toil and trouble, added to the numerous holidays which have followed each other in rapid succession, we should have had rather a lugubrious winter of it.

Telegraph matters shew but little change since my last. The Pacific and Atlantic is steadily advancing in public favor, and the three additional wires which are approaching this point will find plenty of occupation. Considerable flutter was created some time since, in electrical circles, by the announcement that dignitaries of no less magnitude than Messrs. Orton, Stager and Van Horn were on their way to this city, to investigate the charges so boldly made by Governor Warmoth against the Western Union Telegraph Company, of tampering with messages sent from the Executive Department of the State for transmission to New York and Washington, during the great Carter rebellion. Governor Warmoth made that assertion, in the plainest and most concise terms, during the course of his examination before the Congressional investigating committee, and those who knew him feel sure that he knew what he was talking about. The inquisitorial board, however, got no nearer this place than Louisville, and as the complaint of his Excellency was not the only one made about that time, the mercantile community having sniffed a sizeable rat, and publicly turned up their noses at 'that same particular juncture—it is a matter of considerable wonder here why the magnates aforesaid did not persist in their proposed inquiry. Perhaps they were afraid of finding out too much! Who knows?

I have perused with much interest the protest of the Western Union Co. against the absorption of its lines by Government. It is an able document; but don't you think it is rather thin—to speak in the vernacular. Isn't it rather singular that, under a new directory, and in the face of such a possible lamentable result, a stock which has been almost drowned out by excessive watering, and every day compelled to divide more and more of its long monopolized emoluments with an active opposition, should so quickly rise from a dead look at 34 to a seeming activity at 69½? Putting this and that together, by the poor lights vouchsafed to us, and judging by the numerous prior examples furnished by this stock jobbing age, so full of "ways that are dark, and tricks that are vain," this protest looks amazingly like a put up job, to further enhance the already over-quoted stock, and bleed that blessed old

victim of everybody—the Government—handsomely. All right. "Put money in thy purse" is the golden rule of the day.

There have been a few changes in the W. U. office, but of too remote a date to serve your readers as news. The summer approaches, however, and, as it ever does, brings with it the possibility of a friendly call from our old friend Bronze John, and then a general stampede may be looked for, as but few of the operators at present on duty here have as yet had the honor of a shake hands with the old fellow, and can't appreciate him. They can't understand how much he improves by a close acquaintance. He certainly very often serves us excellently, as a sort of moral scavenger, and we don't like to hear him abused. Vale! DON CARADOM.

Personals.

Mr. H. C. MARKS, of the Chicago, Ill., W. U. night force, has resigned and gone home on a visit, and expects to go to California in the spring.

Mr. THOMAS CUREY, of New York, who has been rusticated on the Montreal Company's line for three or four months past, has accepted a position on the Western Union night force at Chicago, Ill.

Miss J. M. BROWN has resigned as operator at Fort Atkinson, Wis., on the C. and N. W. Railway Telegraph.

Miss LOUIE SMITH, of Wrightstown, has been appointed operator at Fort Atkinson, Wis., on the C. and N. W. Railway.

Mr. FRANK WRIGHT has accepted the situation at Wrightstown vacated by Miss SMITH.

Mr. F. A. POWERS has resigned his position as operator at the Wisconsin Division Shops of C. and N. W. Railway, and has accepted a position on the U. P. R. R. line.

Mr. W. H. NORTHWAY has been transferred from the Night Train Dispatchers, Wisconsin Division, to the Wisconsin Division Shops of the C. and N. W. Railway, at Chicago, Ill.

Mr. F. E. MCGRAU, of Jefferson, Wis., takes the position in the train dispatchers' office of the Wisconsin Division of the C. and N. W. Railway, vice NORTHWAY transferred.

Mr. JOE M. GANNON, night operator at Watertown, takes the position at Jefferson, Wis., vacated by Mr. MCGRAU.

Mr. CLAYTON MINER takes the Watertown, Wis., night office of the C. and N. W. Railway.

Mr. W. A. WOODS has been appointed night operator at Harvard, Ill., on the C. and N. W. Railway.

Mr. T. H. WILSON has been transferred from Chester day office to Fond du Lac night office of the C. and N. W. Railway.

Mr. D. A. MORGAN has been appointed operator at Chester, Wis., vice WILSON transferred.

Mr. J. A. LAVEN has resigned and retired from the Western Union office at Sacramento, Cal.

Mr. DORSEY BERRY, an Eastern operator, has accepted a position at Wadsworth, Nevada, with the Central Pacific Railroad.

Mr. JAS. J. ASH has accepted a position as operator at Altamont, on the Western Pacific Railway.

Mr. W. S. HULL, and not Mr. ERIC BLUMENTHAL (as was erroneously stated in THE TELEGRAPHER of the 16th inst.), is the Manager of the Atlantic and Pacific West Side office at Chicago, Ill. The latter gentleman's name was also "bulled," and should have been ERICK BLOMROFF.

Mr. W. IREDALE, formerly clerk of the Pacific and Atlantic Company, Chicago, Ill., has been appointed manager and operator at their new office on Clark street in the burnt district.

Mr. J. P. LENNERT has resigned his situation on the St. Louis, Vandalia and Terre Haute R. R. line at Indianapolis, and accepted a situation with the O. & C. R. R. at Portland, Oregon.

Mr. W. C. TURNER, formerly of the Crocker, Mo., station of the A. & P. R. R., has accepted a situation at the Seventh street, St. Louis, Mo., Depot of the Missouri River, R. R.

The Telegraph.

By Cable.

FINANCIAL RESULTS OF THE POSTAL TELEGRAPH.

LONDON, March 25.—In the House of Commons to-night, the Right Hon. Mr. Lowe, Chancellor of the Exchequer, submitted the annual budget. * * * The receipts from the postal telegraph were £50,000 in excess of the expenses of the service and the payment of interest on stock. The estimated receipts from the postal telegraph for the financial years 1872-73, are £750,000, and the estimated expenditures £500,000.

Telegraphic Brevities.

A FIRE on Saturday night last, at Rockland, Maine, destroyed the Western Union Telegraph Office, and several other stores and offices. Instruments and supplies to reestablish the office were immediately forwarded from Portland.

The Western Union Telegraph Company has opened a new office at Abbington Station on the Northern Pennsylvania Railroad, with Mr. Geo. L. Sparks as operator.

The telegraph line on the Fort Wayne, Richmond and Cincinnati, Railroad has been completed.

Foreign Telegraphic Notes.

THE total number of messages forwarded from postal telegraph stations in the United Kingdom during the week ending March 2, 1872, was 235,559, an increase over the corresponding week of last year of 35,280.

The Director-General of the German telegraphs has intimated his intention of totally abolishing the system hitherto pursued, not only in Germany but in all other countries, of obliging the recipients of telegrams to sign receipts for their due delivery. The motives assigned by him for this alteration is that by far the greatest number of telegrams contain nothing more than might be written on a post card or in an ordinary letter, and that a deal of valuable time is needlessly consumed in hunting up the person to whom the telegram is directed and make him personally sign the receipt. We understand, however, that it is contemplated to allow senders of more important messages to require a receipt to be signed, for which a small fee will be charged, so that, in fact, such telegrams will be placed on the same footing as registered letters. It is not stated when this alteration will come into operation.

It is reported that a meeting of the several boards of the submarine telegraph companies to the East will soon take place in London, for the purpose of arranging an amalgamation.

Advices from Melbourne, Australia, to February 13th, and from Auckland, New Zealand, to February 24th, have been received by steamer at San Francisco, Cal., March 27th. The Melbourne, Victoria, Chamber of Commerce was urging the Government to run a steamer with telegraph despatches from the terminus of the Anglo-Australian Cable to Normantown, where the Queensland line terminates in South Australia. The overland telegraph was nearly ready for working. The company had fixed the charge for twenty words from Adelaide to London at \$45.

Submarine Cables.—Amalgamation of the Eastern Lines.

WE understand that the scheme of amalgamation of the Eastern Submarine Cables Companies into one company, which we suggested as desirable some time since, has made considerable satisfactory progress during the past week, and we hope to be able to announce very shortly that the details of the arrangements have been finally agreed to and adopted by the several boards. If ever there was a clear case for amalgamation it is certainly that of combining under one management the whole of the lines forming together one chain of communication between England and India and the East. A more absurd arrangement could not be well devised than one which required that a telegraphic despatch from England to the East should pass over the cables of some half a dozen distinct companies, each of which has its board of directors and staff of officers, whose sole duty is to collect the portion of tolls which falls to their share. The Falmouth and Gibraltar, the Marseilles and Algiers, the Anglo-Mediterranean, the Mediterranean Extension, the British Indian Extension, and the lines thence to China and Australia, are each under separate management and control. By the proposed scheme there will be one united company covering the whole distance, and each section of the line forming part of the complete system will, in effect, insure the other, and thus afford additional security to investors in these undertakings.—*The Railway News.*

Meeting of the Telegraphers' Insurance Association.—Resignation of Mr. J. D. Reid, Treasurer.—Complimentary Action of a Special Meeting of Telegraphers.

A special meeting of the Telegraphers' Insurance Association was held at the Western Union office, No. 145 Broadway, in this city, on Thursday evening, March 21st, to act on the resignation of Mr. J. D. Reid, Treasurer. The resignation was received with deep regret, and the following very complimentary resolutions were unanimously adopted:

Whereas, Mr. J. D. Reid has offered his resignation of the office of Treasurer of this Association which he has filled from its formation, four and a-half years ago, it is therefore

Resolved, That the same be accepted by this meeting and that we hereby acknowledge our obligations to him for the deep and active interest he has always shown in the affairs of the Association, and for the efficient aid he has given it. To him more than to all others the Association owes its present prosperity and the firm basis upon which it stands, and for which his only remuneration has been the satisfaction that a good man feels in doing good.

Resolved, That we hereby assure him of the absolute confidence the telegraphic fraternity feel in his integrity, and the regret universally felt that circumstances

make it necessary for him to sever his connection with us.

Resolved, That these resolutions be entered upon the minutes, and that the Secretary be directed to furnish a copy of them to Mr. Reid.

Mr. A. S. Brown, Manager of the Western Union Company in this city, was then elected Treasurer, and Mr. A. B. Chandler to fill the vacancy in the Executive Committee. The meeting then adjourned.

Immediately after the adjournment of the meeting of the Association an impromptu meeting was organized by those present, and Mr. A. B. Chandler was called to the chair; Mr. D. R. Downer, acting as Secretary. The object of this meeting was to consider in what way the telegraphers of the country can best testify their regard for Mr. J. D. Reid, and their appreciation of his services. A committee was appointed to arrange for the procuring and presentation of such a testimonial, with power to add to their numbers. The Chairman appointed as such Committee Messrs. W. O. Lewis, A. S. Brown, John Horn, Jr., and the Chairman and Secretary of the meeting were subsequently added. The meeting then adjourned.

The Committee subsequently added to their number Messrs. S. B. Gifford of Syracuse, N. Y.; A. C. Cheney, Rochester, N. Y.; N. Hooker, Buffalo, N. Y.; E. C. Keep, Albany, N. Y.; F. L. Pope, L. G. Tillotson, John H. Dwight, R. B. Lown, New York City; D. Flanery, New Orleans.

It is proposed to give Mr. Reid a substantial token of the high esteem and regard in which he is personally held by the telegraphic fraternity upon the occasion of his retirement from telegraphic service after more than a quarter of a century's labor therein.

New Patents.

For the week ending March 19, 1872, and each bearing that date.

No. 124,773.—APPARATUS FOR LIGHTING AND EXTINGUISHING GAS BY ELECTRICITY. John Vansant, San Francisco, Cal.

1. In combination with each burner of a connected system or series of gas lamps, a mercury or liquid containing chamber and gas inlet or outlet connected therewith, in such manner that by displacement, or rise and fall of the mercury in the chamber, or one part or compartment thereof, connection with the burner passage is cut off or established.

2. Also, the stationary mercury chamber, the stationary inlet and outlet, and the piston or weight for displacing the mercury, the whole being arranged, and the piston or weight operated, substantially as shown and described.

3. Also, the use of a fine metallic wire, insulated and strengthened substantially as described, for connecting together the burners of street lamps, and conveying to them induced or frictional electricity, for the purpose of igniting the gas by a spark, the said fine wire being inside substantially such as is used in the exterior helix of an ordinary induction coil, and may be considered an extension or continuation thereof.

4. Also, the combination of the single battery, the main circuit embracing the lamps of a single series and working the armatures of the magnets of the respective lamps to control the supply of gas to the burner, the single induction coil, and the circuit connecting it with the battery, and the high tension or igniting electric line or circuit, the main circuit and the inducing circuit being both worked by the single battery.

5. Also, in combination with the single battery and single induction coil, a system of lamps composed of several series, each of which series has its own independent main and ignition circuit lines connecting with the single battery and induction coil.

6. Also, the movable arm *d*, plate connecting wires *e*, *f*, *g*, wheel *n*, and rings *h*, *k*, *p*, in combination with the disk or plate *u*, and its plates *v*, *w*, *s*, connecting with the respective circuits, and alternately with the plates or pins of the arm, to successively establish or close and break the respective circuits, substantially as described.

7. Also, in combination with the circuit closing and breaking disk *u*, arm *d*, and wheel *n*, the duplicate series of connecting plates *v*, *w*, *s* for the several circuits of a system embracing independent series of lamps, substantially as described.

8. Also, two conductors for induced or frictional electricity with their spark points near together, and located at the base of the slot in a gas burner, where the air mingles with the gas escaping, thereby forming an explosive compound; said arrangement being for the purpose of shortening the spark, locating it in an explosive compound, and rendering the ignition more certain.

No. 124,868.—ELECTRO-MAGNETIC ENGINE. William Wickersham, Boston, Mass.

1. I claim, in electro magnetic engines, three or more electro-magnetic poles of one piece of metal revolving around a common axis, substantially as described, and for the purpose set forth.

2. I claim the revolving or fixed magnets, or both, elongated in direction parallel to the axis of their rotation, as and for the purpose set forth.

3. An elongated helix suited to the elongated poles of the magnets, as described, made of thin ribbon shaped strips of metal, substantially as and for the purpose set forth.

4. Two series of electro-magnets of alternate north and south polarity, so arranged that when one of the revolving magnets of north polarity approaches the pole of the fixed horseshoe magnet of south polarity one of the revolving south poles shall approach the other (north) pole of the horseshoe fixed magnet, as and for the purpose set forth.

5. The device and arrangement by which the polarity of each pole of one series (the revolving or fixed series) is reversed at the time of the nearest approach to one of the opposite series, the whole of the series in like manner being reversed at the same time, substantially as described, and for the purpose set forth.

Died.

CHASE.—At San Diego, California, December 15, 1871, O. W. CHASE, of consumption, in the 23d year of his age.

Mr. Chase was for some time past a resident of this city, and is remembered by all who knew him as a pure minded, noble young man. He was for some time occupied in the position of operator for the Great Western Telegraph Company, in this city. As a business man, he was obliging and courteous; as a friend, faithful and beloved. He was a victim of consumption, and went to the Pacific coast in accordance with the advice of his physician, only to find a grave "under the beautiful evergreens of the valley of the Sweet Water River," where Dr. Post, of the "Infirmary," writes us he is buried.

His friends reside at Garden Grove, in this State, whose consolation is divine grace, added to the fact that the last thoughts of the loved one were of them, for among his last utterances was "I would like to see my mother!"—*The Daily Nonpareil* (Council Bluffs, Iowa).

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.

FRANK L. POPE, Associate Editor.

SATURDAY, MARCH 30, 1872.

The Massachusetts Railroad Commissioners' Report.

The report of the Massachusetts Railroad Commissioners for 1872 is a volume of 355 pages, a large part of which is devoted to the subject of railroad accidents and the means of avoiding them. As the use of the telegraph, and of electrical appliances generally, is destined to become one of the most important agencies in bringing about a greater degree of safety and immunity from accidents on railroads, it becomes, in some measure, our province to lay before our readers the substance of the Commissioners' remarks upon the subject.

In respect to accidents, the Revere disaster furnishes the text for a careful review of their general causes as well as of those that led to that occurrence. The Eastern Railroad, the Commissioners conclude, had paved the way to this accident, not by violating any law of the Commonwealth, but by laxity of discipline in carrying out their own regulations, deficiency in rolling stock, the want of a siding at a station, and of telegraphic communication with stations, and also the attempt to do an excessive amount of excursion and extra business. But apart from defects peculiar to this road there were causes common to all the railroads of the State which tended to this disaster—such as a deficiency of signals to insure suitable intervals of space and time between trains; want of a telegraphic system of advice to a central station; insufficient brake power, and tail lights of deficient strength. The lesson of the disaster has not been lost in the State, and already many roads have extended their use of the telegraph, and adopted improved train brakes and signals.

Several months ago the Commissioners held a conference with a number of the leading representative railroad officers of the State, and made a number of recommendations regarding the use of improved brakes operated from the locomotive, safety platforms, and heating apparatus, improved signals, etc., including the use of the telegraph. Upon this point, which is perhaps the most important of all, the report says:—

"It was only as regards signals and the use of the telegraph in operating their roads that the Commissioners and the committee of officials were unable to arrive at a thoroughly satisfactory understanding. The suggestions originally made in this respect by the Commissioners were as follows:—

IX.—The general adoption upon all single track roads and branches of a system of telegraphic control in addition to the present time table system.

This was returned by the committee amended so as to read—"The general use of the telegraph in aid of the present time table system," and agreed to as amended.

X.—Wherever upon any road, trains are intended to run within ten minutes of each other, the adoption of a system of telegraphic communication from station to station, enabling each train to be fully informed as to the condition of the track to the next station ahead. Or in lieu of a system of signals providing for intervals of space between following trains, a system which shall provide for a certain interval of time between such trains.

This was returned with the following indorsement:—"Of questionable expediency. The committee deem the accompanying rules a sufficient provision for securing the object the Commissioners have in view."

The object of the Commissioners in making these recommendations was to bring the telegraph into complete use, as an auxiliary to the operation of the railroad system of the State. On this point what they say is new and forcible. It seems that very little systematic, enlightened use of the telegraph has hitherto been made in running railroad trains in Massachusetts, while the Commissioners would have it "a necessary" and recognized part of railroad machinery, with the "use of which every station master and conductor" must be familiar." They say:—

A very large proportion of the rolling stock of the Eastern railroad was rendered unavailable during the week ending the 26th of August, when it was most needed, because trains were standing still at points of

passing, waiting for other trains which were out of time. The track was perfectly clear for miles, but no orders were received, the road was operated in the dark, and the wheels stood still to the equal loss and inconvenience of the public and the corporation. The systematic use of the telegraph can alone enable a company to get the greatest possible amount of work out of a given quantity of rolling stock. Roads like the Chicago, Burlington & Quincy, the Michigan Central, etc., accommodate their vast traffic on a single track simply because they make use of the telegraph, and yet experience has shown that these roads are as free from accidents as any double track roads in Massachusetts. The Commissioners do not wish to be considered as saying anything to discourage the construction of double tracks—they are, of course, safer and more convenient than any single track can be; all they desire to do is to call attention to the prodigious accuracy effected by those who have learned to thoroughly utilize the telegraph. That no Massachusetts road has ever yet done this was demonstrated by the single fact already mentioned, that in the rules of very few of the roads had any provision, even of the simplest nature, been made as to the effect of telegraphic orders, or the course to be pursued by employes in charge of trains on their receipt. The use of the telegraph without such cannot but be accompanied with danger.

Many of the roads of Massachusetts, at the time of the Revere accident, made use of appliances more or less crude and antiquated, such as semaphore signals, dials, sand glasses and green flags, to secure intervals of time between succeeding trains. All of these, however, have served their purpose and been abandoned elsewhere, under the pressure of an increasing traffic, necessitating a more rapid movement.

It is in England, it seems, that the use of the telegraph in running trains is greatest, and, of late, what is called the "block system" has been used with great success. The essence of this system is to substitute an interval of space instead of an interval of time between two trains that follow each other. Some of the Massachusetts railroad officials have declared it impossible to use this system on their roads, because there are so many trains; but the fact is that more trains enter and leave the Cannon street station in London each day through the aid of the block system than enter and leave all the stations in Boston combined. It has been estimated that an average of 50,000 persons were, in 1869, daily brought into Boston and carried from it on 385 trains, while the Southeastern Railway of London received and dispatched, in 1870, on an average 650 trains a day, carrying from 35,000 to 40,000 persons, without the occurrence of a single train accident during the year. On one exceptional day 1,111 trains, carrying 145,000 persons, entered and left this station in the space of eighteen hours. Yet under the pressure of increasing business certain roads leading out of Boston, unable to preserve a sufficient time interval between trains, are considering the costly remedy of a third track. The Commissioners very properly consider that a double track road, with good sidings, and supplemented by a thorough block and telegraph system, besides being easier to manage and less expensive, could accommodate a greater number of trains than a mere three track road.

A very interesting report upon the only successfully operated block system yet introduced into regular service in this country—that of the New York and Philadelphia Railroad—is given in the appendix by Mr. F. L. Pope. The number of trains each way daily on the most crowded portion of this road is forty.

From the action of the railroad officials upon the recommendations of the Commissioners it appears that they do not propose to employ the telegraph in the future under any well defined system, nor to any greater extent than they can possibly help; and that, therefore, in the future, as the tracks become more crowded, we shall be treated to occasional "accidents," *a la* Revere, the disastrous effects of which fortunately will be somewhat mitigated by the Westinghouse brake, the Miller platform, the safety heating apparatus, etc., which they have determined to adopt. These eminent conservatives have yet to learn, it appears, that an ounce of prevention is worth a pound of cure.

Removal of Bliss, Tilletson & Co., of Chicago.

On Monday next, April 1st, Messrs. BLISS, TILLETSON & Co., of Chicago, will remove from their present somewhat restricted quarters, at No. 295 West Randolph street, to No. 41 Third avenue, where they have secured more adequate accommodations for their large and increasing business.

This enterprising firm, it will be remembered, had their manufactory and warehouses entirely destroyed in the great fire last October, together with all their machinery and tools, and nearly all their stock; but with characteristic energy immediately rented a store at 295 West Randolph street, ordered supplies and new machinery from New York, and resumed and continued their business.

They have now rented the whole of the building at No. 41 Third avenue, in that city, and will soon have their works fully reestablished and equipped. All orders are promptly filled, and the reputation which they have secured by honesty, fair dealing and the excellence of their telegraphic and electrical instruments and supplies is second to that of no other similar concern in the country. Their success is as well deserved as it is marked.

Absurd and Tyrannical Regulations and Management.

We published last week a communication from "One who has been there," in regard to the tyrannical management of the ladies' department of the Western Union Telegraph Office at 145 Broadway. We have constantly been receiving information of the tyranny exercised by Miss L. H. SNOW, who occupies nominally the important position of Manager of that department, but apparently a much more important and powerful one, whose influence extends over the whole Western Union lines, officers and employes, in this section. She boasts that there is "no higher authority on the Western Union lines than myself;" and, as far as the practical management is concerned, it appears with good reason.

Of Miss SNOW personally we have nothing to say, but her treatment of subordinates and others associated with her in the Company's service is properly open to our criticism and censure as the organ of the telegraphic fraternity.

The malevolence with which she persecuted the young ladies who participated in the strike two years ago is matter of record. She did all in her power to prevent them from obtaining situations, her evident purpose being to drive such of them as were dependent upon employment for a livelihood to starvation if possible.

The absurdity of the "rules" which were published last week is paralleled only by the peculiar excellence of their grammatical construction. They are in all respects worthy of the source from which they emanate.

We have been informed of several instances in which female employes have been discharged merely for recognising a male acquaintance on the street or ferry-boats, who happened to be an operator; the other party, through Miss SNOW's influence and dictation, being suspended from duty for the heinous offence. It is a well known fact that spies and detectives are employed to watch and dog these young ladies about, and report any instance in which they may transgress her written or unwritten rules and regulations.

The natural consequence of such absurd management is realized in scandals connected with her office, which we have long known, but never before noticed, out of consideration to the many excellent ladies employed under her. We do not propose now to particularize, but her management is justly at fault in the matter.

It is useless to appeal from her to the District or General Superintendent. The former seems to stand in awe of her lightest word or wish, and the latter sustains her without question or hesitation, however ridiculous or tyrannical may be her behests. There seems to be only in the executive office a power which can or will restrain this telegraphic tyrant. Will the President of the Company look into the matter and see that the employes in that department receive proper and reasonable treatment? If not, the time is not distant when no female operator who respects herself will consent to serve in that office.

The whole system of locking female operators up by themselves and under separate management is wrong. It has been abandoned in some of the best offices in the country, and with excellent results. It is a reform which would prove economical and advantageous to the interests of the public and the Company; and if it resulted in contracting the powers of certain tyrannical female managers, or dispensing with their services altogether, it would be no cause for regret.

16,000 MILES OF "JOHNSON'S" WIRE

USED BY THE
TELEGRAPHS OF THE UNITED STATES
DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
MANCHESTER, ENGLAND.

Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

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Manufacturers of every description of

TELEGRAPH APPARATUS.

WE INVITE THE ATTENTION OF
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AND

PROPRIETORS OF PRIVATE LINES,

TO OUR

Magneto-Alphabetical
DIAL TELEGRAPH INSTRUMENTS,

which are in use on the POLICE TELEGRAPH and many PRIVATE LINES in Boston and vicinity.

They require no Battery, and are always ready for use, thus avoiding the expense, trouble and uncertainty attending any Instruments to which Batteries are necessary. They are easily worked, having a straight Key-board, with a key for each letter and figure; are much more rapid than any Printers, and work well on LONG or SHORT Lines.

They are the BEST Instruments for RAILROAD COMPANIES or PRIVATE LINES that have been produced—as Conductors, Engineers, Station Masters and others can telegraph by them rapidly in ROMAN LETTERS.

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As the Type-wheel is adjusted instantly after printing each letter, no mistake can occur, except through the neglect of the operator, and they are as RAPID as any other SINGLE WIRE Printing Instruments in use.

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We have for sale several MORSE REGISTERS, secondhand, but warranted to be in first working order.

Will be sold cheap for cash, if applied for soon.

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THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

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UNIFORM RELIABILITY.

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Baltimore, Md.,
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Cambridge, Mass.,
Charlestown, Mass.,
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Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
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Hartford, Conn.,
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Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
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Toledo, Ohio,
Toronto, Canada,
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The Distinctive Features of these Systems of

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ARE,

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These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System

OR

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM AND

POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

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Messrs. GAMEWELL & CO. are the owners of the original FARMER & CHANNING PATENTS, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

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The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION OF CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

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These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

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a most compact and reliable Switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

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We are now prepared to furnish, after an experience of three years, an Insulated Wire, which can be buried in the earth or exposed to rain and sun, or to the vapor of acids, without injury. Professor SILLIMAN, who has exposed it to the most destructive agencies, finds that it remains uninjured in an atmosphere of ozone, which would destroy gutta-percha in a few hours. It exceeds glass or any other known substance as a non-conductor.

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of the usual size, with KERITE COVER, believing that it will exceed, in insulation for submarine purposes, ANYTHING HITHERTO MANUFACTURED.

We shall be happy to furnish estimates for any amount and size of cable, which will be found to compete with any other construction, both in quality and price.

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We offer for sale, among other novelties, a SOUNDER that will work practically with a single DANIELL cell, a BATTERY that does not require to be taken down but once a year, and the very best MAIN LINE SOUNDERS made.

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Relative TENSILE STRENGTH, homogeneity and elasticity—decreasing the liability to breakage from cold weather, sleet, etc.;

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And in its DURABILITY, which greatly exceeds that of the best galvanised iron wire;

Altogether resulting in a very great reduction in the cost of maintaining and working telegraph lines, while, at the same time, insuring

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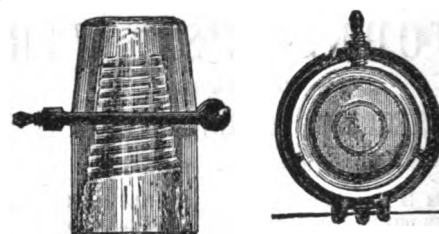
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The undersigned solicits examination of some of the reasons which have induced him to recommend to his patrons and friends the Insulator exhibited above as the best and cheapest in use.

Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal.

As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

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While great care and attention has been given to Instruments and Insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European Governments, only fit for fencing purposes. Many tons of such material now remain here, utterly unsaleable and unfit for use.

The researches of the able electricians of Europe have resulted in establishing a standard of excellence for Telegraph Wire far exceeding that with which we have heretofore been satisfied.

We extract from the minute and specific details a few of the requirements of a

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1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable, and to be galvanised. The wire must be capable of elongating 18 per cent. without breaking, after being galvanised.

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4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

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In other specifications a breaking strain of 1,260 pounds or No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

We now offer for sale this Uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market, to which this system of tests is uniformly applied.

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and our customers ordering it may be sure of receiving an article always uniform, and always the very best.

The capacity or endurance of No. 9 is 21 to 23 TWISTS UPON ITSELF in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

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with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

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Although the wire has been proved IMMENSELY SUPERIOR to that commonly sold, its price will closely approximate to that of the inferior article.

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Long Lengths; Superior Quality; Low Prices.
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Having made arrangements with the Manufacturers for the
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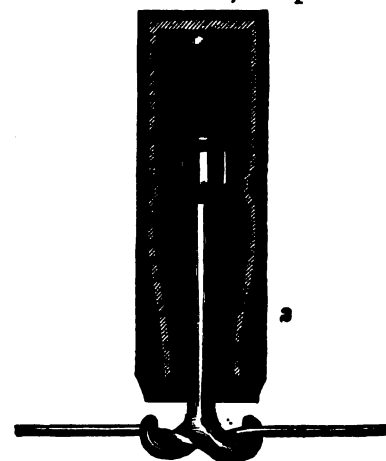
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The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 33.

New York, Saturday, April 6, 1872.

Whole No. 299

Problems of Telegraphy.

From the inaugural address of Mr. Siemens, President of the Society of Telegraphic Engineers of Great Britain, we have made the following extracts concerning some of the problems involved in the future progress of telegraphy:

"Problems of pure electrical science meet the telegraph engineer at every turn: the methods of testing insulated wire, of determining the position of a fault in a submarine cable under various circumstances, or of combining instruments so as to produce recorded messages by the mere fluctuation of electrical tension in a long submarine conductor, are problems worthy of the most profound physicist and mathematician. On the other hand, there is hardly a problem in electrical science that is not of practical interest to the telegraph engineer; and, considering that electricity is not represented at present by a separate learned society, ranking with the chemical or astronomical societies, I am of opinion that we should not exclude from our subjects questions of purely electrical science. The phenomena of electrification and polarization, of specific induction and conduction, the laws regulating the electrical wave, the influences of rise of temperature on conduction, or the potential force residing in a coil of wire of a given form, when traversed by a current, involve questions belonging just as much to pure physical science as to the daily practice of the telegraph engineer, and would, at any rate, be inseparable from our proceedings. Next in order come questions of selection of materials for conduction or insulation of apparatus for the best utilization of feeble currents, of apparatus for producing, altering and directing electrical currents, which, although still intimately connected with physical science, call into play considerations of mechanical combinations. This brings us to questions of purely mechanical import, such as the mechanical construction of instruments for recording or printing messages, of protecting and supporting insulated conductors by sea or land, or of constructing machinery for the manufacture, the laying and the repairing of submarine cables.

"These questions, again, lead up to the more general ones of transport of materials through difficult and inhospitable countries, of navigation, of investigations into the depth and the nature of the bottom of seas, into the nature and effect of sea currents, and so forth, all of which belong, under certain aspects, at least, to the province of the telegraph engineer.

"I would go further, and include even statistical information respecting the nature and growth of telegraphic correspondence, without which it is impossible to adapt the construction of lines and of working instruments to the requirements of particular cases. The invention of a telegraph instrument, for instance, is only of practical value if it is suited to the circumstance of the particular traffic for which it is intended, and to the electrical condition of the lines which it is proposed to work; and when the early pioneers of telegraphic progress elaborated ingenious instruments for sending and recording messages automatically, or for printing them in Roman type, they invariably failed, because the then existing lines were insufficient in every way for such refinement, and the simple needle instrument seemed to suffice for all practical purposes. It was only when the exigencies of the traffic demanded a change that instruments of this nature proved to be valuable inventions.

"In like manner, the long underground lines that were established on the Continent at an early date had to give way to suspended line wire, whereas the present practice and necessities undoubtedly tend toward a reversion to the former, as being less liable to interruption by accident or by atmospheric influences, and because an unlimited number of underground wires may be established between any two stations without encumbering the public thoroughfares. The best mode of insulating and protecting these underground wires, with a view to reducing the inductive influence of the one upon the other, and of facilitating access to the one for the purpose of repairs, without disturbing the others, are questions of practical interest for the present day.

"The electric telegraph is applicable, with the greatest positive advantage, for the intercommunication between two points a great distance apart; through

its agency, New York and Calcutta are as near to us in point of time as are the suburbs of our metropolis from one another. It is probable, indeed, that in telegraphing from one suburb to another, the message has to be oftener retransmitted than in going from the city of London to India or America, because a direct transmission from any one part of London to another would involve an almost infinite number of line wires in all directions. For this reason there must be a limit to the applicability of the electric telegraph in populous districts, and it behooves us to examine whether another agent may not be preferable in dealing with a traffic of this description. The pneumatic tube seems to be well adapted to these circumstances, and, having been first applied for short distances by Latimer Clark, and subsequently modified and extended by others, it will fall within the province of our society to examine fully into this and kindred methods that may be devised for the rapid interchange of intelligence in towns.

"The questions of field telegraphs and torpedo connections are other branches of inquiry to which we shall have to give our attention; and to these may be added the art of combining secret codes and semaphore signals. These remarks may suffice to show how great is the field for our activity, and how much remains to be accomplished, notwithstanding the extraordinary progress of which we are apt to boast."

The German Union Telegraph Company.

THE ordinary method of bringing cable companies before the public is to issue a prospectus wherein a certain amount of money is solicited from the public for carrying out certain works specified and usually contracted for. The present company, however, do not appeal to the public for money to carry out or lay the desired submarine cable, but for money to repay what has been subscribed privately, and which was used to pay for the manufacture and laying a submarine cable, which has now been done for some little time.

Messrs. Walker and Samuda were instructed to offer for sale 8,000 shares of this company at the price of £20 per share.

The company was established in Berlin in May, 1871, with limited liability, under the German laws, to carry out a concession granted on 12th March, 1869, by the Prussian Government, for the term of twenty-five years, to facilitate telegraphic communication between England, Germany and America. The whole of the capital of the Company having been privately subscribed, a cable of the very best construction, containing four conductors, was manufactured and recently laid between Lowestoft, on the coast of Suffolk, and Emden, on the Hanoverian coast by the Telegraph Construction and Maintenance Company, and is now in perfect working order. The cable is connected with all the German Government telegraphs at Emden, and special land wires are now being erected by the Postmaster-General to complete the communication between Lowestoft and London.

Agreements have been made by the Company with the Anglo-American Telegraph Company and the New York, Newfoundland and London Telegraph Company, also with the Submarine Telegraph Company, sanctioned by the Postmaster-General, and with the Great Northern Telegraph Company, under which agreement one of the conductors is specially appropriated for German-American traffic, two for German-English traffic, and the fourth is leased to the Great Northern Telegraph Company. The two conductors to be used for German-English traffic will be worked in London by the Submarine Telegraph Company, and it is expected that by this additional means of communication with Germany the international traffic will be largely increased. The working of the other wires in London, and of all the four wires in Emden, is undertaken by the Great Northern Telegraph at their own expense.

The several agreements appear to act most favorably for the interests of the German Union Company, and from the statistics forwarded, there is every prospect of most remunerative dividends.

The cable itself is a good specimen of telegraph engineering, and was manufactured by Mr. W. T. Henley, at his works at North Woolwich, for the Telegraph Construction Company, which supplies the core from

their gutta-percha works. The conductors are of stranded copper, of excellent conductivity, weighing 107 lbs. per nautical mile, and insulated with three coatings of Willoughby Smith's improved gutta-percha to the weight of 140 lbs. per mile, so that each insulated conductor weighed in the aggregate 247 lbs. per mile. The insulation, it is hardly necessary to state, is excellent.

The several "cores" or insulated conductors were wormed and served in the ordinary manner, and then sheathed with 12 No. 3 B. B. galvanized iron wires for the main cable, and with 12 No. 000 B. B. galvanized iron wires for the shore ends. Each type of cable was further protected with servings of tarred yarn and bituminous compound.

The length and weight of the cable necessitated its being laid in two sections, but the whole was successfully accomplished. The end landed on the coast of Suffolk, at Lowestoft, adds some additional importance to that place from a submarine telegraph aspect. This makes the fourth cable landed there. The others are the Lowestoft and Zandvoort north and south cables, and the Lowestoft and Nordeney (Reuter's), the property of the Post-office; this additional cable makes up a total of sixteen wires starting from that point for continental traffic. How strangely the traffic has grown since 1853, when one wire alone stretched across the North Sea, and now, in addition to the cables mentioned, there are other existing cables northward, which swell the number.

A cable well manufactured and laid on such good ground may be expected to last many years—take, for instance, Reuter's cable separated by but a short distance from the German Union cable, how well that has lasted through these years; and, indeed, it would be vain to attempt to define the life of such a cable, when we have already the Dover cable still in existence and still working, of the ripe age of twenty-two years. —*The Mechanics' Magazine.*

Societe du Cable Transatlantique Francais.

At the fifth annual general meeting of this company, recently held in London to receive the report of the directors and to declare a dividend, and also to confirm a modification of the arrangement with the Anglo-American Telegraph Company for the division of the receipts, in view of laying by this company of a fourth Atlantic cable, and to authorize the raising of not exceeding £900,000 sterling, by the creation of shares and by the issue of debentures, or by either of these means, the Chairman said the result of the year's working fully justified the anticipations he held out at the last meeting. The balance of profit at the end of 1871 amounted to £189,834. An interim dividend of 6 per cent. had already been paid, and the directors now proposed to declare a further dividend of 6 per cent., making a total dividend of 12 per cent. for the year 1871. There would then remain a balance of £24,274, which would be carried to a reserve and renewal fund. He was happy to be able to say that the expenses had been reduced, and there was not one shilling of expenditure applicable to 1872 which was not included in the accounts. The able electrician of the company, Mr. Varley, had localized the slight fault in the cable, and found that it was in shallow water, where there would be no difficulty in repairing it. The most important point to which he would have to call attention would be the laying of a fourth cable, and he might at once state that an arrangement had been come to with the Anglo-American Telegraph Company for the laying by the Transatlantique Company of a fourth cable. The gross receipts were at present divided 63 1-3 to the Anglo-American and Newfoundland Companies, and 36 2-3 to this company; but when the new cable is laid this arrangement will be so varied as to give 52 per cent. to the Anglo-American and Newfoundland Companies, and 48 per cent. to this company. He could not say that these terms were quite so favorable as he could have wished for this company, but they were the best the directors have been able to obtain. The cable was about being commenced by the Telegraph Construction and Maintenance Company, and would be laid in the summer of next year. The shareholders would be asked to sanction the raising of the necessary capital for this purpose. In conclusion, the Chairman

moved the reception and adoption of the report, and the declaration of a balance dividend of 6 per cent., making 12 per cent. for the year 1871.

The resolution was seconded by Lord W. M. Hay.

A discussion ensued, in the course of which Mr. W. Ford, Mr. W. Abbott and other gentlemen expressed their approval of the policy which had been pursued by the board. After which the resolution for the adoption of the report and accounts was put to the meeting and carried.

The following resolutions were then put to the meeting in succession, and carried, viz.: "That the arrangement with the Anglo-American Telegraph Company for the laying by this company of a fourth Atlantic cable upon terms that, from the completion of such fourth line, the relative proportions in which the gross receipts are now divided—namely, 63 1-3 to the Anglo-American and Newfoundland Companies, and 36 2-3 to this company—shall be varied so as to give 52 per cent. to the Anglo-American and Newfoundland Companies, and 48 per cent. to this company, be approved and confirmed; and that the directors be authorized and requested to carry the same into effect, with such modification in the event of any of the cables being interrupted, and otherwise, in such manner as they may determine. That the capital of this company be increased to £1,650,000, by the issue of 20,000 shares of £20 each, in such manner and upon such terms as the directors may determine. That the directors be authorized to raise any sum not exceeding £500,000, by the issue of debentures, at such times and upon such terms as to price, rate of interest and security as the directors may determine.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Congress and the Telegraph.

WASHINGTON, D. C., April 3.

TO THE EDITOR OF THE TELEGRAPHER.

THE House Committee on Appropriations have had under consideration during the last week the application of the Western Union Telegraph Company for increased compensation for transmitting the weather reports and despatches of the signal bureau of the War Department.

The appropriation for the signal service is \$160,000, which General Myers, the chief signal officer, found entirely inadequate to extend the weather reports as has been urged by the Boards of Trade and prominent citizens. He accordingly applied for an increase of the appropriation to \$250,000. In connection with this application Mr. Orton, President of the Western Union Telegraph Company, on behalf of that company, protested against the continuance of the rate for the despatches fixed by the Postmaster-General for their transmission—namely, two cents per word for each circuit of two hundred miles. This it is claimed he has the right to do under the provisions of the Telegraph Act of 1866, of which the company had filed its acceptance. The conditions imposed upon telegraph companies, who accepted the benefits and obligations of the Act, are—

First. That they were to do all work required by the Government, and give its messages priority over any others.

Second. That they were to accept as compensation for the transmission of Government messages such rates as the Postmaster-General should fix.

Third. They agreed to sell their lines to the Government at any time within six years, for a price to be determined by referees.

Mr. Orton has been here several days, and has appeared before the committee on behalf of the company, arguing that the rate determined upon by the Postmaster-General does not pay the actual cost to the company of transmitting the despatches, as they have preference, and the service amounts to a practical confiscation of the lines for three hours per day to the use of the Government. He argued that the signal service messages were not contemplated when the law was adopted, and the acceptance of its conditions filed by the company, and were not of the character specified by the Act.

The Postmaster-General refused to allow any increase of the compensation, and said that the Government would not tolerate the idea that it had not the power to compel the sending of its messages when it wished them sent, regardless of the interests and wishes of the telegraph companies.

As the law stands there seems to be no escape for the companies from doing the business at the rate the Postmaster-General has or may determine upon. Mr. Orton has made a strong contest in the matter for the interests of his company, but has failed to accomplish his purpose. The Postmaster-General desires to secure the establishment of the postal telegraph system, and will not, therefore, concede anything to existing telegraph companies which he is not absolutely compelled to do. He hopes that in some way out of this difficulty his pet scheme may be advanced, and however disadvantageous the arrangement may be to the Western

Union and other telegraph companies, it does not seem to be politic on their part to further press the matter. If persisted in it may lead to serious complications, and the Postmaster-General and other fanatical adherents of the postal telegraph policy are eager to take advantage of anything which may give their schemes additional strength and respectability.

Yesterday the committee decided to recommend an increase of the signal service appropriation to \$225,000, but this does not afford any margin for increase in compensation to the telegraph companies.

Nothing else of importance has transpired here in connection with telegraph matters during the past week. CAPITOL.

Train Despatching on the Kansas Pacific.

KANSAS, March 21.

TO THE EDITOR OF THE TELEGRAPHER.

HAVING had some experience as operator in train despatching offices, I have been interested in the communications which have appeared in your paper during the past few months on train despatching. Much has been said about the different methods of running trains by telegraph, etc., but little in respect to the receipt of train orders by operators and their delivery to train men. I think this part of the subject of considerable importance, as mistakes are often made by the careless manner in which such matters are transacted. I have heard conductors boast of how often they got "orders" without stopping their trains, by jumping off the engine, getting the order, and jumping on the rear end of their train. Such haste is not conducive either to correctness or safety. On this railway (the Kansas Pacific) such things are conducted on an entirely different plan, which for safety and correctness will, I think, recommend itself to all. We have two printed blanks, "A and B," in the following form:

Received by me, _____ Order at _____ Rec'd _____ Sent _____ Operator _____ Of _____ Operators are forbidden to write out the understanding of an order. It must be written by the Conductor himself. Conductors are forbidden to sign the Engineer's name to an understanding on any pretext whatever. Operators are forbidden to sign the name of a Conductor or Engineer, or to TRANSMIT as such signature any name, unless ACTUALLY SIGNED by the person himself.	BLANK "A." From _____ Station, _____, 187 ____ M. To _____ Conductor, and _____ Engineer, Of _____ Train, at _____ Station.
	BLANK "B." To _____ Station, _____, 187 ____ M. Div. Supt. _____, 187 ____ M. 13.—(We understand that we are—)
	Your understanding of the above order is _____ Div. Supt. per _____ Dispatcher. Div. Supt. per _____ Dispatcher. (Operators will make two copies of every Special Order, in ink, and deliver one to the Conductor, and one to the Engineer.) ("Understandings" of Special Orders must invariably be written on Blank B).
	Rec'd _____ Sent _____ Operator _____ Of _____ Operators are forbidden to write out the understanding of an order. It must be written by the Conductor himself. Conductors are forbidden to sign the Engineer's name to an understanding on any pretext whatever. Operators are forbidden to sign the name of a Conductor or Engineer, or to TRANSMIT as such signature any name, unless ACTUALLY SIGNED by the person himself.
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A conductor, on receiving an order on the above blank, writes his understanding on Blank "B." This is sent by the operator to train despatcher, and if "correct," is so endorsed on Blank "A." Both blanks are then endorsed by the operator with the time received and sent, and his own signature—printed spaces being provided for the endorsement. Operators furnish the conductor and engineer each a copy of the order in ink, (on blank "A"), and are forbidden to write out the understanding of an order, or to send it, unless written and signed by the conductor himself; they are also forbidden to transmit the engineer's signature unless signed by himself. You will observe there is little possibility of mistakes occurring. None have ever occurred on this road since the system has been in use. I would like to hear from some railway that has a better system.

KANSAS PACIFIC.

"Betsey's Blue Laws."—A Conundrum for Mr. Orton.

TO THE EDITOR OF THE TELEGRAPHER.

THE perusal of the despicable code of rules imposed upon the lady operators at 145 Broadway, which were recently printed in THE TELEGRAPHER, and your subsequent remarks thereupon, have suggested the following reflections in my mind.

The Western Union Company have a large office in Pearl street in this city, carried on by ladies. A considerable number are employed in their Chicago office. This is also the case, I understand, in Boston. I know that no such ridiculous rules are needed in the Pearl street office, nor in the Chicago office, and I never heard that they were in Boston.

If the ladies at 145 Broadway are so much worse than those in the Company's other offices as to require a set of State Prison regulations to restrain them, why don't they discharge them and get others that have more respect for themselves? If they are respectable and well-behaved ladies, why not treat them accordingly, and not disgrace them in this manner?

You say Mr. Orton is a gentleman, and a man of common sense. Here is a chance for him to shew it. What is his answer to the above problem?

You are unjust to Miss Snow, Mr. Editor. The fault is less with her than with those higher up, who permit such management—nay, approve of it. Remember, that people of obscure origin are apt to become unnecessarily arbitrary when clothed with a little brief authority. Let the responsibility rest where it belongs—with those who have the power but not the disposition to reform these abuses.

Why is it that no thoroughly competent operator is ever allowed to work in that office?

ONE WHO HASN'T BEEN THERE,
AND DON'T INTEND TO GO.

A Reorganization of the Union Advocated.

LAKE SUPERIOR, MICH., March 21.

TO THE EDITOR OF THE TELEGRAPHER.

OUR "Organ" of the 16th is just at hand, and after the perusal of Elliott's suggestions I see the necessity of an Association to keep our business what it should be, or make it so. I fully endorse his sentiments.

Let us get to work at once; call a convention, organize the "Union" and get the ball moving. I would suggest that THE TELEGRAPHER give notice of a convention to meet at such time and place as the fraternity see fit. Let's hear from you one and all. The impression I make is a mere nothing, but I would like to hear every one respond to the call. JACK.

Success of the Pacific and Atlantic Southern Extension.—The W. U. Employees' Card.

—A Telegraph Institute, etc.

NEW ORLEANS, March 26.

TO THE EDITOR OF THE TELEGRAPHER.

WE are having for the last seventy-two hours about the worst spell of weather that could be got up by the lowermost boy in Old Probability's spelling class. It has rained incessantly, with spirited accompaniment of lightning and thunder, disturbing alike the commoner, the telegrapher and those savans who have made the study of the drainage of this city the subject of their hazy minded investigations. I am glad to say that the Pacific and Atlantic lines to this city stood the test well. They are certainly the best lines in this part of the country to-day, for which fact the superintendent, Mr. F. M. Speed, deserves the thanks of the whole business community. Mr. Speed played a little sharp practice on the old monopoly in putting cables of common insulated office wire across Pass Manchacs and working them successfully at a time that the Western Union were laughing in their sleeves at a supposed failure in consequence of the non-arrival of his cables. Let him laugh who wins.

For a long time the lines leading to this city were erected upon scantling totally unfit for the business; but luck and enterprise carried the day, and the Pacific and Atlantic proved at first what it has now come to be acknowledged by the commercial people as the best constructed and most reliable line of telegraphic communication that has ever been worked to this city. On several stormy occasions of late, when older concerns had to succumb, the Pacific and Atlantic was to the fore, and, in fact, supported the Western Union's wires which had fallen upon them. Of course, under these circumstances neither could do any telegraphing. Prof. Haskins has tested this portion of the line for conductivity and places it at 14 ohms to the mile.

The question has been asked, "why were these lines run here? Was it for speculation?" Emphatically no—the need of an independent, honorable and politely conducted medium of telegraph communication has been long and severely felt here. The growing demands of the Western Union had long made the demand an imperative one. It was the merchants of this city who had grown tired of the extraordinary demands of the great monopoly, who subscribed the \$50,000 to bring the wires of the Pacific and Atlantic to this city, and it is pretty well known that not a dollar of the stock owned in this city has as yet been put upon the market, notwithstanding assertions made to the contrary by the Western Union people.

By the way, my attention is necessarily called to the card published in yours of the 16th, purporting to be a denial of all the operators of the Western Union office of a statement in a former letter of mine, in regard the ejection of Manager Flanery from our Cotton Exchange. Well, it is somewhat singular to what straits some people will come to save their bread and butter. With the most friendly feelings towards and the best wishes for the prosperity of the signers of that card, with the facts staring me in the face, I can only say I am sorry that a telegrapher's existence depends upon such a slight and untenable ground as is by them fairly and fully shown. As Capt. Bunby would say, "If so, and why not? When found make a note on't."

We have a new thing in the shape of a "Metropolitan Telegraph Institute," which advertises that it is "established for the special purpose of qualifying young men as operators for the numerous new lines of railroad building throughout the Southwestern States," and only charges \$60 for finishing the job. As the institute does not propose to furnish the young men brains, some portions of their prospectus are decidedly good as rare specimens of rank impudence. I inclose one of their circulars for the benefit of any "young man" of your acquaintance who wants to be qualified.

DON CARADON.

P. S.—The Great American Traveler, Mr. John E.

Clarke, is still sojourning in New Orleans. Mr. Wm. J. Cook has resigned from the Pacific & Atlantic office. By the time you receive this the Pacific & Atlantic will have two through wires to the North—only three more miles to string. D. C.

Honors to the Memory of the Father of the Telegraph.

THE funeral of the late Professor S. F. B. Morse took place yesterday (Friday) morning at eleven o'clock, at the Presbyterian church on the corner of Madison avenue and Twenty-fourth street, after which the remains were conveyed to the family vault at Greenwood. An account of the ceremony will be published in THE TELEGRAPH for next Saturday.

EXECUTIVE AND LEGISLATIVE HONOR TO THE DECEASED.

ALBANY, April 3.—Governor Hoffman to-day sent to the Assembly by his private secretary the following communication:

STATE OF NEW YORK, EXECUTIVE CHAMBER, }
ALBANY, April 3, 1872. }

TO THE LEGISLATURE:

The telegraph to-day announces the death of its inventor, Samuel F. B. Morse. Born in Massachusetts, his home has for many years of his eventful life been in New York. His fame belongs to neither, but to the country and the world; yet it seems fitting that this great State, in which he lived and died, should be the first to pay appropriate honors to his memory. Living, he received from governments everywhere more public honors than were ever paid to any American private citizen; dead, let all the people pay homage to his name.

I respectfully recommend to the Legislature the adoption of such resolutions as may be suitable and the appointment of a joint committee to attend the funeral of the illustrious deceased.

JOHN T. HOFFMAN.

In the Assembly Mr. Fields moved that the communication be referred to the Committee on Federal Relations, and that the Committee report suitable resolutions to the House to-morrow morning. Adopted.

In the Senate, resolutions relative to the testimonial to Professor Morse, and ordering that a committee be appointed to attend his funeral were adopted. It was also suggested that his statue be placed in the Capitol at Washington in place of, or in addition to, the statue of Robert Fulton.

THE WESTERN UNION TELEGRAPH COMPANY.

A meeting of the Board of Directors of the Western Union Telegraph Company was held at the office of the company, 145 Broadway, on Wednesday last, to take action relative to the death of Professor Morse. A committee consisting of Ezra Cornell, Hiram Sibley, Sir Hugh Allan, Cambridge Livingstone, Dr. Norvin Green, Edward S. Sanford and William Orton were appointed to prepare suitable resolutions expressive of the feelings of the company at the decease of Professor Morse. The following resolutions were adopted:—

Whereas, the Board of Directors of the Western Union Telegraph Company have learned of the death of Professor Samuel F. B. Morse, the father of the American telegraph system, whose name has become justly identified with the establishment of the telegraph throughout the world, therefore,

Resolved, That we mourn, with the entire civilized world, the loss of one of the great benefactors of the age, and we grieve for a friend and associate whose purity and simplicity of character and kind and gentle nature have endeared him to our memories. While his great achievement will continue to bless and benefit the enlightened races of mankind, the memory of his personal worth will ever remain in the hearts of all who have had the good fortune to know him.

Resolved, That we unite in the universal expression of sorrow which is this day being transmitted to and echoed back from all quarters of the earth by means of his transcendent achievement; and we hereby tender our earnest sympathy to the family of our friend.

Resolved, That this board will attend Professor Morse's funeral in a body.

THE NEW YORK, NEWFOUNDLAND AND LONDON TELEGRAPH COMPANY.

At a meeting of the Directors of the New York, Newfoundland and London Telegraph Company, held at the City Bank on the 3d day of April, 1872, it was unanimously

Resolved, That the directors of this company have heard with deep regret of the decease of Professor Samuel F. B. Morse, who died last evening at his residence in this city.

Resolved, That we grieve for the death of Professor Morse, not only because he was a distinguished philosopher and the founder of the telegraphic system, which has so changed the relations, commercial and social, of the world, but because he was our intimate associate and friend, having been connected with this company for the last eighteen years, and that we tender to the family of the deceased our sympathies in the hour of their affliction.

Resolved, That the directors of the company will, in a body, attend his funeral, and that a copy of these resolutions be transmitted to his family and entered on the minutes of this Board.

EDWIN F. HATFIELD, President.

DEMONSTRATION OF REGRET AT WASHINGTON.

WASHINGTON, D. C., April 3.—To-night a preliminary meeting was held under the auspices of the Morse Memorial Telegraph Association, of Washington, to take suitable action with regard to the death of Prof. Morse. It is understood that there will be a general demonstration of our citizens in the House of Representatives at an early day. A committee was appointed to prepare business for an adjourned meeting, which is called for to-morrow evening.

The Telegraph.

By Cable.

A NEW TELEGRAPH CABLE FROM GREAT BRITAIN TO PORTUGAL.—LISBON, April 3.—A convention has been signed by the Maintenance and Construction Company of Great Britain and the Government of Portugal for the laying of a telegraphic cable from Lisbon to Brazil, by the way of the Madeira and Cape Verde Islands.

The St. Pierre and Duxbury Cable Again Broken.

It will be seen from the following official communication that the St. Pierre and Duxbury cable, of the French Cable Company, is again temporarily interrupted.

SOCIÉTÉ DU CÂBLE TRANSATLANTIC (LIMITED), }
26, OLD BROAD STREET, LONDON, E.C., }
March 18 }

SIR: I beg to inform you that this company's cable, between St. Pierre and Duxbury, was interrupted on Saturday evening last, the 16th inst., during a very severe gale. Our superintendent reports that the fault is close to St. Pierre, and will in all probability be easily repaired when the weather moderates. In the meantime the traffic crossing at St. Pierre from Europe, is forwarded from Sydney, and vice versa; the general service is not in any way interfered with. I am, sir, your obedient servant.

(Signed), EATON T. CUMMINS, Secretary.

The Panama and Jamaica Cable.

A correspondent of the *New York Herald*, writing from Panama under the date of March 14th, states that "on Sunday, March 10th, the steamship *Dacia*, of the West India Cable fleet, with Mr. Edward Bright on board, entered the port of Aspinwall—the object of the visit being to examine the shore end of the cable laid sixteen months ago and test its insulation for the entire length laid down. The examination and tests proving satisfactory, the *Dacia* sailed again next day, 11th inst., at one o'clock P. M., to grapple for the cable near the point at which it was lost. The electric tests showed that some three hundred and sixty miles had been paid out—a little more than half the cable required to connect the Isthmus and Jamaica. As the weather is now propitious for the work it is believed that five days from the date of sailing from Aspinwall would be time sufficient to recover the cable, and once more hold communication with Aspinwall. The *Dacia* will merely grapple for the cable till recovered, then buoy it and return to Jamaica to report progress. The steamship *International*, which has the new cable on board, will then proceed to complete the work. In the course of a few weeks—a month at most—we may expect to be in direct communication with the United States and Europe.

Telegraphic Extension in Japan.

THE English Government have received the following official letter, through the Vice-Consul of Yeddo, from the Chief Assistant Supt. of telegraph works in the service of the Japanese Government:—"Imperial Government Telegraphs, Tokyo, 13th January, 1872. Sir: I am instructed by E. George, Esq., to lay the following information before you for your annual reports to her Britannic Majesty's Government of the works now being carried out, etc., for the Imperial Government of Japan, as asked for in your letter of this day. The lines of telegraph at present at work are as follows:—Tokyo to Yokohama, Gaimushio (Foreign Office), and Kinchi, Osaka to Kobe and the Royal Mint. The works in course of construction are:—Tokyo to Nagasaki, Nihon Bashi, Hongo, Riomoku Bashi, Hasakusa, Kobashio, Akabane and Yotsuga. The above extensions will, I hope, be all completed in the course of six months. Further extensions have been ordered, but have not been commenced. I have the honor to be, sir, your obedient servant, John Tasker Foster, Chief Assistant Superintendent of telegraph works. To H. Dohmen, Esq., H. B. Majesty's Vice Consul, Tokyo."

Turkish Telegraphy.

ACCORDING to a recent writer, "Telegraphs were introduced in Aleppo Syria a few years ago by the Government, and now reach about all the places of any importance; but let not any one suppose that telegraph means the same in Turkey as it does in America. The motto of everybody in this country is 'Yavash, yavash' (slowly, slowly), and even electricity is handled by these phlegmatic Turks in accordance with their

time-honored customs. Electricity is altogether too fast for the average followers of the prophet; but, as it pays no heed to 'yavash, yavash,' after it is started, the Turkish operator delays the message as long as possible at one end, and the Turkish carrier at the other end waits till a quantity of telegrams have accumulated, and then devotes half a day to delivering the arrivals for the week. Let me mention a couple of cases that occurred under my own observation a few days ago. One gentleman telegraphed to Aleppo from Antioch, distant about one hundred miles by telegraph route, and got his answer in just forty-eight hours, though his agent in Aleppo answered immediately."

Special Meeting of the Stockholders of the Western Union Telegraph Company.

A MEETING of the stockholders of the Western Union Telegraph Company took place Wednesday afternoon at the principal office of the company, 145 Broadway.

The only important feature of the meeting was the passing of a resolution authorizing the issue of bonds of the company for the sum of \$1,500,000 to meet the remaining instalments of the purchase money of real estate bought by the company at the corner of Dey street and Broadway, and for the erection of buildings thereon.

Presentation to Mr. J. D. Purkis, General Manager Dominion Telegraph Company.

ON Saturday, March 28th, the employees of the Dominion Telegraph Company waited on Mr. J. D. Purkis, General Manager of the company, at his residence, No. 235 Jarvis street, Toronto, Canada, for the purpose of presenting him with a handsome service of silver plate, subscribed for by the whole employees of the line, as a mark of the respect and esteem in which Mr. Purkis is held by them. The presentation was accompanied with an elaborately illuminated address, expressing their pride and satisfaction in the successful progress made by the company in extending its wires, and their feeling that to his untiring energy is mainly due the successful working of the lines, in face of the many difficulties encountered on assuming the management, and recognizing his impartial and gentlemanly treatment of the employees.

Mr. Purkis responded, expressing his gratitude and thanks, and his appreciation of the compliment, and recognizing the cordial and faithful cooperation of his associates in furthering the interests of the company, and his confidence in its future prosperity and success.

Foreign Telegraphic Notes.

THE total number of messages forwarded from Postal Telegraph Stations in the United Kingdom for the week ended March 9, 1872, was 251,004, an increase over the corresponding week of last year.

The telegraph to Guadeloupe is opened. The Governor of Guadeloupe has sent the first telegram to the French Government. It expresses the unaltered attachment of the colony to the mother country.

The *Gazette*, of Madrid, of March 12, publishes a decree authorizing Senor Ortega to lay a submarine cable between England and Spain, starting from the Bidassoa, near Yrun. The cable will have to be in working order within two years.

It is announced that an auction for the laying down and working of a submarine telegraph cable between the Peninsula and the Canaries, with capability of prolongation to America, would be held on the 22d March, at the office of the Director-General of Post-offices and Telegraphs in Madrid.

On Sunday morning, March 10, the Lord Mayor received a telegram from the Mayor and Council of Demerara, tendering to his lordship and the Corporation of London their congratulations on the completion of cable communication between Demerara and the mother country. The telegram was dated the 8th.

The council of the Society of Arts has taken the initiative in the formation of a public committee to further the movement on foot for the acquisition by Government of the submarine cables. The following gentlemen (members of the council) have consented to form the nucleus of this committee: Lord Henry G. Lennox, M.P., chairman of council; Major-General F. Eardley Wilmot, R.A., F.R.S.; Vice Admiral Ommanney, C.B., F.R.S.; Seymour Teulon, vice chairman of Council; Andrew Cassels, Edwin Chadwick, C.B.; Hyde Clarke, Samuel Redgrave, vice chairman of Council.

New Patents.

For the week ending March 26, 1872, and each bearing that date.

No. 125,039.—ELECTRO-MAGNETIC APPARATUS FOR STEERING TORPEDO BOATS, &c. John G. Foster, Nashua, N. H.

1. The herein described method of operating the steering devices of a torpedo boat by means of the direct application of electricity to the same, as set forth.

2. In combination with an electro-magnetic apparatus for steering torpedo boats, the reel or drum M, constructed and arranged for operation, substantially as and for the purpose set forth.

3. The combination of the batteries N and H with the magnet J, drum I, and rudder C, constructed and arranged to operate substantially as and for the purpose set forth.

Died.

BROWN.—In Binghamton, N. Y., April 2d, of quick consumption, ELLIOT H. BROWN, late operator in the Fifth Avenue Hotel, in this city, aged 23 years, 3 months and 18 days.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS
OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, APRIL 6, 1872.

OBITUARY.

Death of Professor Samuel Finley Breese Morse.

It is our painful duty to announce the decease of Professor SAMUEL FINLEY BREESE MORSE, which took place at his residence in this city on Tuesday evening last, April 2. For several weeks past he has been ill; but, except for his advanced age, not so much so, previous to Thursday of last week, as to cause serious anxiety to his family and friends. He has suffered from severe attacks of neuralgia, which on that day developed into neuralgia of the head, and he commenced to sink rapidly. On Friday it became apparent that the earthly pilgrimage of the distinguished discoverer and inventor was about to terminate, and that his death might be expected at any moment. On Monday morning there was a decided change for the worse. Most of the time subsequent he was unconscious, and, with the exception of a few minutes on Tuesday morning, when he seemed to be conscious but unable to speak, he remained in a comatose condition until he expired—at ten minutes before eight o'clock P. M. He died full of years and of honors, surrounded by the members of his family and devoted friends, who gathered to his bedside to witness the closing scene of his long, eventful and useful life.

Professor MORSE was born at Charlestown, Massachusetts, on the 29th of April, 1791, and was, therefore, at his death eighty years eleven months and four days old.

Having developed decided artistical talents, after graduating at Yale College in 1810, his father, the Rev. JEDEDIAH MORSE, D. D., sent him to Europe, where he could pursue his studies to better advantage. While abroad he met with considerable success, one of his pictures having gained the prize of a gold medal, with high commendation from the Society of Arts.

During the four years that MORSE was a student in Yale College he attended the lectures of Professor BENJAMIN SILLIMAN, where he became acquainted with all that had, up to that time, been discovered relating to the subject of electricity and electrical action. The only batteries then in use were the pile of VOLTA, the battery of CRUIKSHANK and the *Couronne des Tasses*. In 1825-26 MORSE attended a course of lectures on electro-magnetism, given by Professor DANA, in which all the discoveries in that science, up to that time, were explained and experimentally illustrated; and it was here that he saw what was, probably, the first electro-magnet ever constructed or exhibited in America. Professor DANA was an enthusiast on the subject of electro-magnetism, and being an intimate friend of MORSE, made it a constant topic of conversation. Thus MORSE became incidentally well acquainted with all that was then known of the action of Voltaic electricity and electro-magnetism.

It was while on a voyage from Havre to New York, in 1829, in the packet ship "Sully," that he conceived the idea of the invention destined to effect so wonderful a revolution in the modes of intercommunication. He invented and drew in his sketch book, while on board the vessel, the general plan of his recording telegraph, including the conventional signs adapted for this purpose; and after arriving in New York, and before the close of the year 1832, he cast a quantity of type embodying these signs. Owing to pecuniary embarrassment and other causes, it was not until 1835 that the first telegraphic instrument was constructed by MORSE, in accordance with his original designs.

It was not until 1843 that he succeeded in obtaining the necessary means to practically test the practicability of his system. Capitalists declined to invest

their money in what was generally considered a chimerical idea, and it was only after the most persistent effort that Congress could be induced to make an appropriation of \$30,000 for the construction of the experimental line between Washington and Baltimore. This line was completed on the 24th day of May, 1844, and the transmission of the first message demonstrated the practicability of the great invention, giving to the world indisputable evidence of the triumph of intellect over time and space.

The history of the telegraph from that time is familiar to our readers, and in fact it is the history of Prof. MORSE as well. The first triumph was succeeded by years of arduous but persistent labor on the part of the inventor and those who, with an appreciation of the value and importance of the invention and a foresight of its ultimate triumph, had associated themselves with him. Delays and discouragements, toil and poverty were all encountered and overcome.

It is not our purpose now to give the history of its steady advance, across continents and beneath oceans, till now but one link remains to complete the world's electric girdle. The MORSE has become almost the universal telegraph of the world; nations have overcome their prejudices in favor of their own productions, and adopted the MORSE as the most simple, practical and useful of all telegraphs. Wherever, throughout the world, these instruments are to be seen, they but serve to speak praise to the name of MORSE and honor to his nation.

The latter years of Prof. MORSE's life was passed in comfort, his invention having at last secured to him pecuniary remuneration sufficient to enable him to live in ease and independence surrounded by family and friends. He has been the recipient of many tokens of honor from European Sovereigns, but until the initiation of the movement for a Telegraphers' Testimonial Statue which was successfully carried out and the statue inaugurated on the 10th of June last, with the exception of a banquet given to him in this city, nothing had been done to show the honor and esteem in which he was held in his native land.

We have reason to know that of all the honors received this was the one most prized by him. It was to him a cause for peculiar pride and gratification that the practical telegraphers—the telegraphic laborers—should crown his final years with such a mark of their esteem, honor and appreciation. Without doubt the proudest day of his life was that on which, as the honored and revered guest of his multitude of telegraphic children, he witnessed the inauguration of the statue which for the future shall manifest the estimation in which he is held by those who practically utilize his invention.

It was a fitting tribute, and all who contributed to or participated in it in any way will hereafter rejoice that the opportunity to do so was afforded them.

Prof. MORSE has not inappropriately been styled the "Father of the Telegraph." He will go down in history to all future time as the inventor of the first practical electric telegraphic system. While his claim to this proud position is not undisputed, yet the faith in it is universal, and as the "Father of the Telegraph," we believe he will continue to be regarded throughout the world and for all time.

He is one of the few mortals whose memory and honor become immortal, and continue from age to age while the world lasts. Scarcely one man in a century attains this indestructible honor; and notably of the few who do, most of them are men who have made some discovery or invention which is of universal benefit and use, rather than warriors or heroes.

The announcement of the death of Prof. MORSE will be received throughout the civilized world with sorrow and regret, but to the fraternity in this country it will come as a personal bereavement. We shall no more meet the cordial grasp or see the kindly face of the venerable father of the telegraph. He has crossed the dark valley which all of us must, sooner or later, solitary and alone, pass from the confines of time to eternity. His years have been prolonged in the land which has delighted to do him honor, and his health and strength were wonderfully preserved until his final illness, so that he could almost to the last fully appreciate and enjoy the blessings which surrounded his closing years. He sleeps his last sleep calmly and quietly. The bickerings and contentions of this world

trouble him no further. Not for him, then, should we mourn. He has answered the great summons

To join the innumerable caravan
That moves to the pale realms of shade:

* * * * *
Like one who draws the drapery of his couch about him,
And lies down to pleasant dreams.

The Stevens Institute of Technology.

THE following spring course of lectures is announced by this institution, to which we would call the attention of all interested in scientific subjects. The Institute is situated a very short distance from the ferry, in Hoboken, and is, therefore, easily accessible to persons living in New York and the adjacent cities.

The lectures are given every Tuesday evening—the first having been delivered on April 2, by President Henry Morton, on "Light as a Mechanical Force." The dates, lectures and subjects for the remainder of the course are: April 9, by President Morton, "Polarized Light;" April 16 and 23, by Prof. Stephen Alexander, "The Nebula Hypothesis;" April 30, by Prof. A. R. Leeds, "Chemical Force;" May 7, by Prof. C. F. Chandler, "Water;" May 14, by Prof. A. M. Mayer, "The Loadstone;" May 21, by Prof. A. M. Mayer, "The Earth a Magnet."

These lectures will be illustrated with all the brilliant experiments of which the subjects admit, and for which the facilities of the lecture room of the Institute and its splendid collection of apparatus give such unusual opportunities. Tickets for the course can be obtained for \$1, and for single lectures for 25 cts., at the Institute.

This course of lectures will be found very interesting and attractive, and the subjects are such as every well informed person should be, to some extent at least, familiar with. In this case they will be presented by men who speak with the authority of profound knowledge.

To Correspondents of the Telegrapher.

THE very general interest in the train despatching question is evidenced by the numerous communications which we are receiving from train dispatchers and others on the subject, some of which we publish this week, and others, which are unavoidably postponed for want of room, will appear in due season.

In this connection we would once more remind our correspondents of the necessity for writing only on one side of the paper, and for sending their names with the communications, if they desire them to appear in our columns. Notwithstanding the standing notice at the head of our correspondence columns, we frequently receive communications unaccompanied with the names of the writers, which fact will explain their non-appearance.

A New Telegraph Line.

THE people of Glen Cove, Long Island, have long needed and desired telegraphic communication with this city, and the telegraph system of the country. Lately Messrs. Cox, TITUS, and other enterprising citizens, took the matter in hand, and have succeeded in making arrangements for the construction of a line, which is now being built from Glen Cove to Brooklyn, where it will connect with the Atlantic and Pacific Telegraph Company. This will afford accommodation to the citizens of and summer visitors at Glen Cove, Oyster Bay and other places, which will, no doubt, be fully appreciated and liberally patronized.

Contracting for Telegraph Construction.

ATTENTION is called to the card of Mr. ROBERT BROWN, telegraph contractor, which will be found in our advertising columns. Mr. BROWN is well known to the telegraphic fraternity in this vicinity and has built many lines herabouts. He has experience as a telegraph builder, and will make contracts on favorable terms for the construction of telegraph lines in a substantial and durable manner and of the best materials.

Unavoidably Postponed.

IN consequence of the pressure upon the columns of THE TELEGRAPHER, consequent upon the death of Prof. MORSE, we are obliged to omit a number of articles and communications prepared for the present issue.

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Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
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Omaha, Neb.,
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Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
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San Francisco, Cal.,
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that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

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the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

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AND THE

PRESS

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is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

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RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

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The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION of CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

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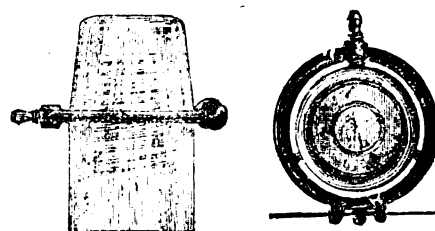
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4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

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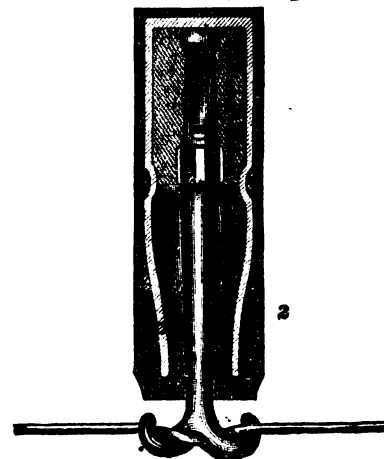
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The Telegrapher

A Journal of Electrical Progress.

Vol. VIII.—No. 34.

New York, Saturday, April 13, 1872.

Whole No. 300

The Funeral Services of Professor Morse.

As stated in the last number of THE TELEGRAPHER, the funeral services of the late Professor S. F. B. Morse took place on Friday morning of last week, at eleven o'clock, in the Madison Avenue Presbyterian Church. The services at the church were preceded by a prayer at the late residence of the deceased, on West Twenty-second street, where only the relatives and intimate friends were in attendance.

The church was crowded (with the exception of reserved seats along the centre aisle) more than an hour before the services commenced. The communion table was covered with choice flowers, appropriately arranged as crosses, crowns and wreaths; a beautiful cross of rare white flowers being contributed by the young ladies of Rutgers College.

Soon after eleven o'clock the funeral procession reached the church, and as they entered an original offertory of dirge music was performed by the organist. The procession was headed by Rev. William Adams, D.D., and the Rev. Francis B. Wheeler, D.D., of Poughkeepsie. Professor Morse has been a member of Dr. Wheeler's church for over twenty years. The pallbearers were General John A. Dix, Peter Cooper, Wm. Orton, Cambridge Livingston, Daniel Huntington, Cyrus W. Field, Charles Butler and Ezra Cornell. After these came Governor Hoffman, with several members of his staff; the Legislative Committee; officials and employees of several telegraph companies; and delegations from the Evangelical Alliance, Chamber of Commerce, Stock Exchange and Association for the Advancement of Science and Art; delegations from the Common Councils of New York, Brooklyn and Poughkeepsie, and many of the Yale Alumni.

After the audience had taken their seats, the choir sang the anthem, "I heard a voice from heaven." Dr. Adams then read appropriate selections from the Scriptures, and the hymn, "Asleep in Jesus, blessed sleep," was sung by the choir to the tune of "Rest," both the words and music being favorites of the deceased.

Dr. Adams delivered a beautiful and eloquent address, which the pressure upon our very limited space prevents our giving in full.

After an eloquent introduction, he said, "The true value of a good life can never be lost; the good which men do lives after them, and is not interred with their bones. * * * He is the true Methuselah who originates good thoughts and projects, which live a thousand years after he himself has passed from the world. * * * If it be true, according to the

Scriptures, that no man dieth to himself, emphatically true is it that the death of such a man as this is like the fall of an oak in a grove, creating a wide chasm and bearing with it many trees, vines and boughs to the ground. Deep as are the sorrows caused by this death in the home circle and in private intimacies, it cannot but be regarded as a public bereavement. We sorrow not alone—millions share the shock. One is awed by the thought that no sooner had death come to this dear and honored friend than by means of that instrumentality which his genius had effected the intelligence was throbbled beneath the billows of the ocean, across the Continent eastward and westward, and simultaneously became the topic of remark and the occasion of grief in London, Paris, Rome, Vienna, Berlin, St. Petersburg, Syria, Egypt, India, China, Japan, and in every part of the civilized world. We say in familiar phrase, 'He is dead;' but he lives still, and will live forever in forms of usefulness which are intimately related to the peace, welfare and advancement of the whole human race."

After a brief sketch of the history of the deceased, with which the readers of THE TELEGRAPHER are familiar, and of his religious experiences, convictions and enjoyments, the speaker said, in conclusion, "To-day we part forever with all that is mortal of that man whom we have loved so much, and who has done so much in the cause of Christian civilization. Less than one year ago his fellow-citizens, chiefly telegraphic operators, who loved him as children love their fathers, reared his statue in bronze in the Central Park of this city. That venerable form, that face so saintly in its purity and refinement, we shall see no more. How much we shall miss him in our homes, our churches, our public gatherings, in the streets of the city, and in that society which he adorned and blessed. But his

life has been so happy, so useful, so complete, that for him nothing remains to have been wished. He has left to his family, his friends and his country a spotless name beloved by all nations, and he died as a Christian, in the bright and blessed hope of everlasting life. Farewell, beloved friend, honored citizen, public benefactor, good and faithful servant. While your eulogy shall be pronounced in many languages, this, I believe, was your own highest aspiration—to have your name written as an humble disciple in the Lamb's Book of Life."

After Dr. Adams had finished his address he was followed with prayer by the Rev. Dr. Wheeler, and the chant, "Just as I am, without one plea," was sung by the choir.

An opportunity was then afforded to those present to take a last look at the mortal remains of the distinguished inventor. The immense audience slowly filed through the centre aisle, passed the coffin, and quietly dispersed. A great number seemed to be visibly affected, as though the deceased had been a personal friend.

But little change was visible in the well remembered features of the venerable professor. There were no apparent traces of pain or illness. He seemed to have fallen into a calm and gentle slumber, and it was difficult to realize that his spirit had indeed departed from its earthly tenement.

At the conclusion of the services at the church the remains were taken to Greenwood Cemetery and deposited in the receiving vault. The burial service was read and prayer offered by the Rev. J. A. Hodge, of Hartford, son-in-law of the late Richard Morse, and the benediction was pronounced by the Rev. Dr. Wheeler. There were only fourteen carriages in the procession, and as it moved down Broadway, frequently stopped by the blockaded streets, or divided by the crossing of trucks, none would have imagined that it was escorting to his last resting place one of the most distinguished Americans of the age.

Thus concluded the funeral ceremonies of one of the most distinguished citizens who has honored his native land, and who, in the fullness of years, has passed from earthly associations. The distinguished attendance at his obsequies manifested the great respect and esteem in which he was universally held, and the popular appreciation of the fact that in him the country and the world had lost one of its chief benefactors.

The Manifestations of Respect and Appreciation of the late Professor Morse.

THE death of Prof. Morse has called forth so many manifestations of the regard in which he is held personally, and the appreciation of his eminent services to his country and mankind, that the columns of THE TELEGRAPHER would not suffice to record them all, even if its whole space in this issue were devoted to that service. It is impossible to more than barely allude to most of them. The letter of our Washington correspondent, "Capitol," will inform our readers of the proceedings of Congress upon the occasion, and of the other proceedings relative to the event at the national capital.

In this city and State all classes recognized the fact that a distinguished citizen had closed his earthly career, and that an eminent public benefactor had passed from earth.

In the Board of Assistant Aldermen of this city, on Thursday of last week, a preamble and resolution expressive of deep sorrow for the death of Prof. Morse, of condolence with the family of the deceased, and bewailing his loss to the world of science, were adopted, and it was determined to attend the funeral in a body, together with the members of the Board of Aldermen. The above resolutions were subsequently ordered to be placed upon the minutes of the Board of Aldermen, and a delegation of the Board appointed to attend the funeral.

The action of the Legislature at Albany was printed in our last number.

Legislative and municipal bodies in all parts of the country have also passed resolutions of respect and condolence, and expressing their recognition of his eminent services, and of his death as a subject of general mourning and regret.

The following resolutions were passed, Wednesday evening, April 3d, by the National Academy of Design, of this city:

Resolved, That in common with the rest of the world, it becomes our painful duty to recognize the passing away from among us of Professor Samuel F. B. Morse, our first President—we may almost say the very founder of our institution. A man endeared to many of us by still closer personal ties, the last of a trio of painters, from whom have proceeded during the past century the three, perhaps, most remarkable inventions of the age, in their widespread and still spreading influence upon mankind—for Fulton, Daguerre and Morse are names which will hereafter associate themselves in the minds of men to a very remote stretch of time. He would be bold, indeed, who should venture to predict the enormous results that may yet grow out of these seeds even beyond their present development, or attempt to unveil all the possibilities of growth that yet lie hidden in the womb of time. We cannot but feel some pride in the share which study of our common profession must have had in developing those faculties with which he wrought the great telegraphic plan that makes his name forever famous. And though he has secured such a lasting name by other than the pursuit of that art with which he set out in life, had he confined himself thereto, there is little doubt among the best judges in art matters but that he would even there have left his among the roll of names not born to die. We desire to mingle our sorrows with those who were nearest and dearest to him, in sympathy and condolence with their grief, and may he rest in peace.

Resolved, That we will attend the funeral of our deceased brother academician, and that these resolutions be entered on the minutes, and a copy of them be transmitted to the family.

The New York Stock Exchange voted to adjourn both calls of stocks on the day of the funeral, out of respect to the memory of Prof. Morse, and passed resolutions of regret, for presentation to his family.

The Chamber of Commerce, of this city, on Thursday, April 4th, adopted the following resolutions:

Resolved, That the members of this Chamber have learned with sorrow and regret of the death of Professor Samuel F. B. Morse, a gentleman whose name has become cosmopolitan, and whose great scientific invention, "wrought by God," as he gratefully acknowledged, has electrified the whole world by giving to our globe a nervous system of far-reaching and quick intelligence, which has astonished mankind by its marvellous activity and power in the dissemination of ideas and the advancement of commerce and civilization. As an American citizen and inventor of eminence we will cherish and respect his memory. His fame belongs to all nations, and will ever shine forth illustriously in the galaxy of man's great benefactors. As representatives of mercantile interests which have so largely reaped the benefits of his skill and perseverance, we acknowledge our indebtedness to him, and we hereby respectfully tender to his widow and family our sincere sympathies at this time of their bereavement.

Resolved, That the foregoing be entered on the minutes of this day's proceedings, and that a copy of the same be suitably engrossed and forwarded to Mrs. Morse.

The Chamber resolved to attend the funeral in a body.

The telegraph offices in this city generally, with the exception of the office of the Gold and Stock Telegraph Company, at 61 Broadway, were draped in mourning—the office of the Atlantic and Pacific, and of the Franklin Telegraph Company, at No. 11 Broad street, being the first to exhibit the mourning signals.

As the honors paid to him by the telegraph employés were always the most gratifying to and highly appreciated by the deceased, the following proceedings, of meetings of the telegraphic fraternity, which have been forwarded for publication in THE TELEGRAPHER, possess especial interest.

At a meeting of the telegraphers of Cincinnati, Ohio, and vicinity, to take action upon the death of Prof. Morse, about one hundred were assembled. On motion, Geo. T. Williams, Sup't, was appointed President, and B. H. Johnson, Secretary. The following gentlemen were appointed Vice-Presidents: R. Lewis, L. C. Weir, W. W. Smith, J. C. Van Dusen, Geo. M. Lane, J. W. Sherwood, I. N. Miller, C. S. Rogers, J. S. Lyle, A. Hayward, J. E. Reeves, George Floyd, J. C. Clegg, J. D. Ellison.

Committee on Resolutions reported the following resolutions, which were adopted:

WHEREAS, It has been the will of God to remove from us our greatly beloved benefactor and friend, Prof. S. F. B. Morse, the great originator of the Telegraph,

Resolved, That we have lost at once a brother and father—one whom we cannot replace—the scientific world a great teacher, society a bright and noble ornament of spotless character, and America the inventor of the age.

Resolved, That, as a token of esteem for the great deceased, the telegraphers of this city drape their instruments and wear the usual badge of mourning for the space of thirty days.

Resolved, That we extend our tenderest sympathies to the bereaved family in their great loss, and beseech that they may receive consolation from the Giver of all good and perfect gifts.

Resolved, That a copy of these resolutions be forwarded to THE TELEGRAPHER, Journal of the Telegraph, and the daily papers of this city, for publication.

Appropriate remarks were made by L. C. Weir, F. A. Armstrong, W. W. Smith, Dr. Nicholson, and others. Expressions of sympathy, and resolutions adopted, were received from Louisville, New Orleans, New York, and various other points of the Union, and read to the meeting. The following message was transmitted to the principal telegraph offices in the United States by the meeting:

"CINCINNATI, 3.

TO ALL OFFICES—

The children of the telegraph, here assembled tonight, join you in their expression of sorrow and regret in the loss of their great benefactor.

(Signed), THE FRATERNITY OF CINCINNATI."

The Western Union and Pacific and Atlantic companies had their office poles, which are very tall ones, draped from top to bottom.

It was suggested that Mr. George Floyd, Assistant Superintendent of the fire alarm telegraph, be requested to toll the fire bells on Friday, the day of the funeral.

The meeting then adjourned.

All the telegraph offices of the various lines, at Cincinnati, and several of the railroad telegraph offices, were draped in mourning in memory of Prof. Morse.

There was also on exhibition, in front of the Western Union buildings, a large portrait of Professor Morse, draped, also a Morse register, similarly ornamented.

At a meeting of the operators and other telegraphic employees of Nashville, held at the office of the Western Union Telegraph Company, at 3 P. M., April 4th, for the purpose of taking appropriate action on the sad occasion of the death of Prof. Morse, the meeting was organized by the election of Mr. Jo. W. Fisher, as chairman, and Mr. E. C. Boyle, secretary.

Messrs. George W. Trabue, W. D. Gentry and J. B. Morris were appointed a committee to draft appropriate resolutions expressive of the feelings of the meeting, and the following was reported by Mr. Trabue, chairman of the committee, and unanimously adopted:

WHEREAS the melancholy tidings of the death of Prof. S. F. B. Morse, at 7.43 P. M., April 2d, has reached us. Therefore,

Resolved, 1st. That having long entertained for Prof. Morse a filial regard inspired by habitual feelings of reverence towards him, as the illustrious father of the telegraph, and respect for his character and genius, we receive the intelligence of his death with the deepest sorrow and regret for this our own and our country's loss.

Resolved, 2d. That in the death of Professor Morse the people of the whole world have lost one whose name does and will continue as long as time lasts to illuminate and mark the century in which he lived as the brightest and best of all preceding centuries, and an age in which more has been accomplished for science than any other, and one in which more great discoveries have been made in the way of developing the materials and elements which God intended for the use and benefit of man, but which remained undiscovered and useless so many ages for the want of determined and resolute men like Prof. Morse.

Resolved, 3d. That while it is the common duty of all his countrymen to honor his memory, it shall ever be our pride to cherish a more tender regard and to emulate his many virtues as well as his immortal achievements in the art of telegraphy.

Resolved, That the city press and the telegraphic journals be requested to copy.

GEORGE W. TRABUE, Chairman.
W. D. GENTRY.
JOHN B. MORRIS.

Pending the adoption of the resolutions, Messrs. Trabue and Gentry made very appropriate and interesting remarks, eulogizing the illustrious deceased, and urging the younger members of the profession to profit by his example of patience and perseverance under the adversities attending the initiation of his wonderful invention, which finally led to complete success, and crowned him with honors seldom conferred upon man.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Honors to the Memory of the Late Prof. Morse.

WASHINGTON, D. C., April 10.

TO THE EDITOR OF THE TELEGRAPHIC.

THE news of the death of Professor Morse has excited universal regret at the national capital, and Congress has paid unusual honor to his memory.

In the House of Representatives on Thursday of last week, Mr. S. S. Cox offered a concurrent resolution, declaring that Congress has heard "with profound regret of the death of Professor Morse, whose distinguished and varied abilities have contributed more than those of any other person to the development and progress of the practical arts, and that his purity of private life, his loftiness of scientific aims and his resolute faith in truth render it highly proper that the Representatives and Senators should solemnly testify to his worth and greatness." This resolution was unanimously agreed to.

Mr. Fernando Wood, of New York City, gave a brief history of the legislation under which Prof. Morse's invention was practically tested in this country. The speaker was a member of the Twenty-seventh Congress to which Prof. Morse applied for aid to test his invention. With great difficulty the proposition appropriating \$30,000 was passed in the House by a vote of 89 to 87. He expressed the great pride with which he (Mr. Wood) found his name recorded in the affirmative, and he was to-day the only living member of either House who voted in favor of the bill.

On Thursday evening of last week, a large meeting of citizens of Washington was held to take action in relation to the decease of Prof. Morse, of which Prof. Hedrick, of the Patent Office, acted as chairman, and H. Amidon acted as Secretary. At this meeting arrangements were made to obtain the use of the hall of the House of Representatives, for memorial services in honor of the late Prof. Morse, to take place on Tuesday evening, 16th inst. A resolution was also unanimously adopted, as follows:

Resolved, That the people of the United States be requested to meet in their respective cities, towns and villages on the evening of the 16th day of April, at eight o'clock, to give expression to the loss sustained by the world in the death of Professor Samuel Finley Breece Morse, and to hold simultaneous communication by telegraph with the Assembly of the people's Representatives and the citizens of Washington, convened for the like purpose in the capital of the nation.

On behalf of the Western Union Telegraph Company, the following communication was furnished to the chairman of the committee of arrangements:

MY DEAR SIR—I am authorized by Mr. Orton, our President, to say to you that the company will cheerfully grant the use of our wires for direct communication between the simultaneous Morse memorial meetings which it is proposed to hold. Please advise me of the date fixed upon for the meeting.

Very truly yours,

LEONARD WHITNEY, Manager.

A committee of five on resolutions, with Senator Patterson as chairman, and a committee of arrangements of fifteen, were appointed, with full power to act.

At a subsequent meeting of the committee of arrangements, held on Monday evening last, the use of the hall of the House of Representatives having been secured, the near completion of the arrangements was reported. Leading members of both Houses of Congress will deliver short addresses, and Oliver Wendell Holmes has been invited, and will probably read a poem prepared for the occasion. Letters have been addressed to the Mayors of the principal cities of the United States, requesting them to call public meetings on the same night, and an effort is being made to have similar meetings held throughout the world, and placed in telegraphic communication with the meeting here.

It was resolved to extend invitations to the Governors of the different States to act as Vice-Presidents, and that such as cannot be personally present be requested to appoint a proxy to represent them, residing or sojourning in Washington.

It was also determined to invite the widow and family of the deceased to be present and to become the guests of the nation. Rev. Dr. Adams, the pastor of the deceased has been invited to open the proceedings by prayer. The memorial services are intended to be of a very imposing character, worthy of the distinguished character and services of the deceased.

On Friday of last week, on motion of Mr. Dawes, of Mass., the House resolved that it will take part in the memorial services on Tuesday evening, 16th inst., in honor of the memory of Professor Morse, under the auspices of the National Morse Monument Association, and that for that purpose it will assemble on that evening in the hall of the House, and that the Speaker will preside on the occasion.

The Senate will also be present and participate in the services.

CAPITOL.

Are the Advocates of a Telegraphic Association in Earnest or merely Shams?

MOBILE, ALA., April 3, 1872.

TO THE EDITOR OF THE TELEGRAPHIC.

A MONTH or two ago one could hardly pick up a copy of THE TELEGRAPHIC without seeing earnest and eloquent letters advocating telegraphic associations, appealing piteously, and with apparent honesty, to the fraternity at large for speedy steps in that direction; overflowing with professions of deepest interest for our future and subscribing hand and heart to the support of any movement calculated to promote our welfare; and as well as I remember, Mr. Editor, you did not withhold expressions approving measures looking to the accomplishment of an end so much desired. Knowing, sir, how rarely a satisfactory result is reached by continued discussion through the columns of a newspaper and how prone men are to contend for favorite views upon any question, how reluctant to yield even the most trivial point, and at the same time wishing to ascertain the depth of the sentiment so generally expressed, I, after giving in a short letter some views upon the basis of association, suggested a convention as the best and quickest means of reaching a conclusion, and asked your opinion. Feeling that this would be a practical test of the sincerity of the many friends of organization, I have awaited anxiously for their response. One single echo has been produced; one single true note has been heard in answer to the sound of the business bugle. They are sorry for what they said, they did not mean it. A nice little acknowledgment.

Now, gentlemen, I claim no such ardent enthusiasm as has been affected by some, but hope that I feel sufficient interest in this matter to carry me beyond my writing desk, and let me say, in all seriousness, that if you are going to rely on letter writing and journalistic debate for the consummation of your object, that of effecting an organization which shall benefit and elevate the profession, you will be sadly, wretchedly disappointed. The realization will never come. It seems to me to be the purest childishness to talk of maturing the plans and purposes of an association by newspa-

per controversy; it is absurd, and the sooner you abandon the idea the better for yourselves and the readers of THE TELEGRAPHIC. The suggestions made by Elliott and others in regard to learners are good and should be brought before a convention. After an organization has been formed is the proper time to discuss its internal policy and not before, especially where the principal object is as well defined as this. I do not think it is presumption in me to say that I am not alone in what I have said so far as the South is concerned. It is an old saying that "there must be some fire where there is much smoke," and there is truth in it. I thought I should find an illustration of this truth in this matter of organization, but it seems I have been deceived, in that, what I took to be smoke was only vapor.

ALABAMA.

An Argument in Favor of the American System of Train Despatching and for Good Train Despatchers.

ILLINOIS, March 30.

TO THE EDITOR OF THE TELEGRAPHIC.

I HAVE read with much interest the letters in THE TELEGRAPHIC on the subject of train despatching, and only venture to make a few remarks with the hope that the discussion may be continued, so that we may learn something from the suggestions that will be made. Mac's motion for a convention is good, and if a universal system were established one great difficulty would be overcome. The Milwaukee and St. Paul R. R. system, spoken of by Hindoo, must be a slow one. You have to wait until the conductor and engineer answer before advancing a train. "Swift and sure" is what is called for now. The time order plan much used is not safe, because not positive. A train receives an order that she has until a specified time to reach a certain point; failing to make it she has to back up or run into some side track, where there may not be a telegraph office, and lay there for some time, a source of anxiety to the despatcher and the train that expected to meet her. The suggestion to save time by sending both holding and advancing order at the same time will not meet much favor. For my part, I like to have a train as secure as it can be held under present manner of working before giving the first letter of an advancing order. A deal of responsibility seems to me to rest on the despatcher; therefore, a man is required who will not be satisfied with simply acting up to the rules, but who will use caution and judgment in giving sharp or close running orders, and who will consider the position of the station where he is making the meeting point, whether trains can see each other some distance off; if the operator is a reliable man, and has been on hand for some time previous to receiving this order, so he would know really if the train to be held had passed or not, has the right of track, train had time to reach or pass the point, &c. I have seen more than one collision saved by the exercise of a little judgment. Managers know how to get good men and keep them, but work the road cheaply is the cry, and the cause of a good many smashes. Cheap men as well as cheap plans are dangerous. SAFETY.

Important and Sensible Suggestions.

BURLINGTON, IOWA, March 27.

TO THE EDITOR OF THE TELEGRAPHIC.

FOR some time past I have been a close observer of THE TELEGRAPHIC, and have studied carefully the different communications contained therein relating to the organization of a Telegraphers' Union, and also in regard to the education of "too many operators." These are questions I consider of great importance to the fraternity, and the sooner they are carried out the better it will be for all concerned. A great deal has been said concerning these matters in the last few months, and it seems they are no nearer consummation than when first opened to discussion. Now, why is it? Why do not all operators take hold and bring these important matters to a point? I believe it is because one is waiting for the other to move. We want some one to take hold and carry the thing through. Let us either work or dismiss the subject altogether.

We complain of the education of too many operators, and that they work for half price, etc.; now, here in the West, I know that at least one third of the men employed on the different railroads as operators do not know even the first rudiments of our profession, and the greater portion of them cannot write or spell correctly, and I think would be troubled to tell how many 5x5 are. This is the class we have to deal with. They are a detriment to the railroad and telegraph companies and an imposition upon those who have spent years in making themselves expert operators and good electricians. Until we do organize ourselves into a body, and adopt such measures as will prevent the employment of this class of men, and prove to the railroad and telegraph companies wherein they are detrimental, we must submit to the imposition and the consequences attending it; so let us work. That the rapid increase in the number of railroads and telegraph lines enhances the demand for operators, is an undisputed fact, and if we must teach telegraphing, let us teach only those who have a fair education and assign them to situations as soon as they are fitted for them, and pay them a salary according to their ability. I strongly endorse the suggestions of "Elliott" in your issue of

the 16th inst.; also those of THE TELEGRAPHIC of the 9th and 16th instant. Their importance should be considered and acted upon at once. There are suggestions made by others, of equal importance, which should not be forgotten.

Let us call a convention, to meet somewhere in Ohio or Illinois in the month of June or July next; there we can give the matter full discussion. Let us hear from our brothers of Canada and the Pacific Coast. Boys, push on, and we'll succeed. I think when the telegraph companies are aware of our motives they will support us in our work. HAWK EYE.

The Initiation of Telegraphic Plugs Denounced.

ST. PAUL, MINN., March 18.

TO THE EDITOR OF THE TELEGRAPHIC.

I NOTICED a communication in THE TELEGRAPHIC of March 9th, over the signature of "Canuck," on which I desire to make a few remarks. I glory in the spunk of the correspondent, and think that at the present day there are a great many operators, or "plugs," as they are more appropriately termed, employed on railroad telegraph lines who are unfit for the discharge of the duties to which they are assigned.

At this time we have on our line no less than a dozen inefficient operators who scarcely know the "call" for their offices. If the line were under my management I would discharge every one of them and substitute men who know their business. I was told the other day by an employe of the road there are agents along the line who are teaching from two to three students. Although the teaching of students in the offices on our road is strictly prohibited, still the officials make no effort to enforce the rules and stop it.

This business is becoming fearful! as "Canuck" and "An Old Sounder" say. I would earnestly endorse the advisability of forming a union to prevent the constantly increasing infringement of our rights. Let some of the other brothers speak. IBEX.

A Correction.

MOUNT ROYAL TERRACE, April 8.

TO THE EDITOR OF THE TELEGRAPHIC.

ALLOW me to correct two historical errors in your article on the death of Prof. Morse, in the last issue of THE TELEGRAPHIC.

The Professor was born 27th, and not 29th April, 1791. It was in 1832, and not in 1829, while returning from Havre in the packet ship "Sully" he conceived the idea of his telegraph. H.

To Correspondents.

REPAIRER.—"The Modern Practice of the Electric Telegraph" is the work you want, and the best for the purposes mentioned.

F. H. C., Ann Arbor, Mich.—We know of no mourning badge pin specially adapted for telegraphers.

Personals.

MR. EDWARD L. HAVILAND has resigned his position in the Highland, Texas, Western Union office, to engage in other business at Cincinnati, Ohio.

MR. JOHN ALLISON, formerly of the Ottumwa, Iowa, office of the B. & M. R. R. R. R. Telegraph, has accepted a situation with the U. P. R. R. at Medicine Bow, Wyoming Territory.

MR. C. F. WILLIAMS, formerly at Nebraska City, Nebraska, has accepted a situation with the Western Union Telegraph Co. at Omaha, Nebraska.

The present address of Mr. JOHN REILLY, telegraph operator, who worked in Washington, D. C., in October last, is desired.

The Telegraph.

By Cable.

ANOTHER ATLANTIC TELEGRAPH CABLE PROJECT.

LONDON, April 9.—A circular is issued inviting subscriptions for 45,000 shares in the Great Western Telegraph Company, which proposes to lay telegraph cables direct from England to New York, and thence to the West Indies. The shares are twenty pounds sterling each. The total capital of the company is fixed at £1,350,000. The Hoopers will make and lay the cable for £1,330,000.

Telegraphic Extension in Salvador, C. A.

A CORRESPONDENT at San Salvador writes us that the telegraph lines between San Salvador and La Union are progressing satisfactorily under the direction of Mr. W. S. R. Taylor, formerly of Yreka, California. The first office, Cojutepeque, a distance of thirty miles, was opened on the 22d of January last. The line for that distance is worked with nine cells of Hill's battery. The largest circuit, of about 200 miles, was expected to be worked with fifty cells of Hill's battery. As a matter of course glass insulators are not used on these lines. They are built of Johnson & Nephew's No. 11 wire, with Brooks' latest pattern improved insulators. The lines are being constructed by Mr. S. McNider, well and favorably known in connection with the telegraph in this country, under contract with the Salvadorian

Government. He uses the small line wire on account of the difficulties of transportation in many parts of the interior of Salvador. There will be eleven offices in all on the lines, and when it is completed and fully opened for business the whole State may be said to be in telegraphic communication, the lines previously constructed by Mr. C. H. Billings, running north and west, and the new ones east and south.

There is but little inducement offered to American telegraphers, as the salary paid operators is only \$30 per month, with very slight prospects of an increase.

The New Chicago, Ill., Western Union Office.

THE new Chicago office of the Western Union Telegraph Company is to be situated in the Union Bank building, a fine edifice about to be erected on the southwest corner of Washington and La Salle streets, just across the street from the location of the office before the fire. The design of the building is a very handsome one, being in the Italian style, with massive columns of different orders on the several stories. It will be 90 feet from the sidewalk to the top of the elaborate cornice. The block will have 100 feet front on each street, both fronts being similar in style. The interior is to be divided into banking and other offices, and will be provided with fire-proof vaults throughout.

The Western Union Company will have their offices on the corner in the basement, and Gen. Stager's office will be on the second floor.

A spacious and commodious operating room will be provided for in the upper part of the building, which is intended to excel any other office in the country for beauty and convenience.

A steam elevator, entered from Washington street, will lead to the several floors. The building is expected to cost \$150,000.

Foreign Telegraphic Notes.

At an extraordinary general meeting of the Anglo-American Telegraph Co., held in London, March 11th, the directors were authorized on behalf of the Company to carry into effect any agreement or agreements with the French Cable Company and the New York, Newfoundland and London Telegraph Company; having for their object the laying of a new Atlantic telegraph cable between England and New York by the said Company, and the varying of the proportions in which the traffic receipts are now divided so that this Company and the New York, Newfoundland and London Telegraph Company shall, after the completion of the said new cable, and whilst all the four lines are in working order together receive 52 per cent., and the French Cable Company 48 per cent. of the receipts, and, providing that the proportion coming to this company and the New York, Newfoundland, and London Telegraph Company shall be divisible between them in the proportion of two thirds to this company and one third to the New York, Newfoundland and London Telegraph Company, and that the subsidy of £25,000 a year from the last mentioned company shall continue to be payable to this company, and in other respects on such terms and conditions as the directors of this company shall require or approve.

THE Overland Telegraph in Australia has been established 1,200 miles to the northward. It is proposed to bridge over the intervening distance; and the service, probably, over the whole line will be in operation in four months.

The number of messages transmitted from Postal Telegraph Stations in the United Kingdom during the week ended March 16th, 1872, was 252,432, an increase over the corresponding week of last year of 49,667.

An Irregular "Beat."

Two Boston newspapers have correspondents in Lawrence, and on Sunday night last one of these correspondents sent a dispatch to his paper, describing the funeral services held in the city Sunday afternoon, which were participated in by the Masonic order, the G. A. R., and the Fire Department; the other correspondent wrote a dispatch, describing the same affair, but on reaching the telegraph office he found it was closed; not knowing where the operator lived, and being unable to send his dispatch, he felt somewhat chagrined, and went home muttering something about telegraph operators, and those things that are necessary to give water-power to mills.

Meeting his brother correspondent this morning, he told him how he had missed sending his dispatch; the other consoled with him and remarked, "I sent quite a dispatch," and at the same time opened his paper to show it to No. 2 correspondent. But the dispatch wasn't there. "Very strange," he muttered, "I sent it in time; they're probably reserving it for the next edition, being pressed with matter."

"Very likely," said the other, and proceeded to open his paper, when lo! the first thing that met his eye was the dispatch referred to. The operator had made a mistake and sent the dispatch to the other paper. When last seen, correspondent No. 1 was running toward the telegraph office with a brick in his hand.—Exchange.

A new and ingenious advertising dodge is to print an advertisement upon a strip of paper like a telegraphic dispatch, and enclose it in an envelope of the telegraphic pattern.

New Patents.

For the week ending March 19, 1872, and bearing that date.

No. 124,800.—TELEGRAPHIC RECORDING INSTRUMENT.—Thomas A. Edison, Newark, N. J., assignor to himself and George Harrington, Washington, D. C.

1. A roller raised and lowered by the action of an electro-magnet, and acting to impress ink upon a strip of paper in dots and dashes, substantially as set forth.
2. The inking wheel in combination with the roller and electro-magnet, substantially as set forth.
3. The inking wheel and roller, in combination with the electro-magnet, for moving said roller, and the magnetic motor for actuating the wheel and paper roller, substantially as set forth.

For the week ending April 2, 1872, and bearing that date.

No. 125,151.—ELECTRO-MAGNET. Isaac P. Tice, New York.

A compound electro-magnet having its limbs surrounded by helices of unequal size or length, wound in opposite directions upon each of its limbs, substantially as and for the purpose or purposes herein set forth.

For the week ending March 26, 1872, and bearing that date.

No. 125,078.—ELECTRO-MAGNETIC APPARATUS. James W. Powell, New York.

This is a medical apparatus, for which the claims are too lengthy for, and not especially adapted to our columns.

Recent British Patents.

No. 1,474.—W. R. Lake, Southampton Buildings, London. TELEGRAPHIC PRINTING APPARATUS, BATTERIES, CIRCUITS AND OTHER APPLIANCES. Dated June 2, 1871.

1. This relates to a telegraphic printing apparatus, in which a compound helix, made of three pairs of helices, with a hinged switch-bar running through the core of the middle pair, is connected with the type-wheel key and printing key. The escapement to the type-wheel consists of two ratchet crown wheels, with an intervening double pallet on the end of a lever vibrating by the alternate action of magnets. Motion is imparted to the type-wheel when the circuit is closed or opened. Two pins on the type-wheel shaft act in combination with an anchor and the platen or printing lever, so that one throws the anchor in the path of the other, whereby the type-wheel is stopped at what may be termed the starting point, and the printing lever throws the anchor out of the path of the stop, so that the type-wheel motion may continue. The paper strip is fed by two elastic rollers, with intermittent rotary motion from the printing lever.
2. This relates to a one-wired telegraphic printing apparatus, in which a compound magnet is composed of three helices arranged to a back piece, with a vibrating bar or core extending through the centre helix and hinged at the bottom. The escapement consists of two ratchet wheels with beveled teeth and intervening pawls, attached to the extended arm of the vibrating bar; by the alternate action of the magnet and positive poles of the line battery over the centre helix, and of a local battery over the outside coils; or of a local battery on the centre helix, and line current over the outside coils; or of a line current over all three helices, a to-and-fro movement is given to the vibrating bar or core, an oscillating movement to the pawls or dogs, and a step-by-step movement to the type-wheel. The paper feeder consists of two rollers, the lower one elastic, with intermittent rotary motion from the printing lever. The upper pawl, being attached to the printing lever, causes the paper to be drawn forward after each impression, while the auxiliary pawl acts as a check to the elastic roller and a stop to the printing lever. Two pins on the type-wheel shaft act in combination with an anchor and the electro-magnet in the circuit with the printing magnet. These are the pallet and stop-pins, the former operating to throw the anchor in the way of the latter, stopping the type-wheel. The printing magnet passes over a small or unison magnet to which an armature fixed to the anchor is attached, and the anchor being disengaged from the stop, the type-wheel shaft revolves. The anchor can also be dislodged by the printing lever, through an electro-magnet suspended over the printing apparatus with a lever bearing on the vibrating armature. The pole changer consists of a cylinder or drum in connection with two metallic toothed wheels, and insulated spaces wider than the teeth. An extra circuit closer and key closes the negative or positive pole of the battery for repeating a letter without moving the type-wheel. The governor for the transmitter consists of a cylinder, and a double arm pivoted to a shaft running through the cylinder, with friction pads on the ends. 3. Relates to a single type-wheel, in single wire printing telegraph instruments; also to taking the impressions by means of a spring instead of an electro-magnet. An electro-magnet in lieu of a spring is combined with the paper feed. An electro-magnet, in circuit with the type-wheel magnet, operates the printing lever by an extra current when the type-wheel is in the desired position. Also arranging electro-magnets in a current so that no local battery shall be required upon the printing apparatus. 4. Relates to printing telegraphs, in which the motor is a train of wheels and weight, with an escapement in combination with electricity for governing the train, and for placing the type-wheels in a desired position. The chief features are (a), an escapement, whereby a type-wheel is stopped and securely held, and not allowed to pass by a single letter in advance of the transmitter (b), a compound magnet, with iron bar or vibrating armature acting as escapement lever, the magnet also acting as a local circuit-breaker (c), a simple and convenient transmitting apparatus, in combination with the pole changer a circuit changer, and in combination with the compound electro-magnet is the circuit closer, which are combined with an escapement, a train of wheels and weight or spring, with unison mechanism, and an anchor in combination with the printing cover and type-wheel shaft, loose pinions and spring, whereby the shaft, arrested by the unison mechanism, is liberated by the printing lever. 5. Relates to improvements in the "Morse" system, and to electric circuits in combination with electro-magnets to operate with only one line wire. In the improved relay the spring is dispensed with, the line current itself automatically making and breaking the local current by its action upon the relay magnet, so as to use a lighter current. In the improved sounder, also, the spring is dispensed with, and the movement of the hammer adjusted by screws, with a small local battery. In long line telegraphing, with an improved repeater, the operator is enabled, at a distant station, automatically to close a local battery upon a line repeating at that station the impulse, whether of long or short duration, and also at that station to close the continued line circuit with the same polarity; so that, if using the line current for more than one purpose, the opposite polarities or poles of the battery effect the different purposes. A key is used in combination with the compound electro-magnet. The sounder or receiving instrument is operated in the main line circuit at great distances without the aid or employment of a relay, and is composed of the compound electro-magnet, vibrating soft iron core and an anvil, with a call or signal bell. A non-adjustable relay is used, and an automatic pole changing relay, operated automatically at a distant station by an alternate open and closed main line circuit, or by alternate negative and positive currents transmitted over the main line circuit. The pole changer operates in connection with compound electro-magnets. An automatic electro-magnetic switch or current changer is used. The pole changer is combined with one or more electro-magnets, and one or more compound magnets. In reporting printing telegraph apparatus, a single main line wire, having two grounds for rotating the type-wheel in the circuit, is combined with a "metallic" circuit to effect the printing.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, APRIL 13, 1872.

The Last Tribute to Prof. Morse.

WE surrender a large portion of the present number of *THE TELEGRAPHER* to an account of the funeral of the late Prof. MORSE, and of the tribute paid to his memory throughout the country. It seems to be but fitting that a journal exclusively devoted to telegraph interests should record as fully as practicable these manifestations to the memory of one universally regarded as the "Father of the Telegraph." For all future time the name and fame of the deceased is associated with the art which has become so universal and world wide in its use and application.

It is true that his title to the proud distinction which is generally accorded to him has been, is, and probably will continue to be disputed. This is not the time, when the world is mourning his decease, to discuss the question; but we desire to say that we believe that others have claimed for him much more than he has ever claimed for himself in connection with the discoveries which have rendered his "one of the few, the immortal names that were not born to die." The time has not yet come when the claims of those concerned in the development of the electric telegraph can be accurately adjudicated and determined. It is not questioned that the MORSE was the first practical and successful recording telegraph; and Prof. MORSE, as we understand it, has never claimed the exclusive credit and honor of the discoveries and inventions which combined to secure that success.

The last sad rites have been paid to his remains, his personal presence has gone from us forever; but his works and his memory are yet with us, and are part of the common inheritance of mankind. He was fortunate in securing recognition and reward for his services while living, and in the general tributes to his memory which follow him to the tomb.

The lesson of his life is one which should be earnestly and thoughtfully studied by all, and which will prove of value to those especially who are struggling in poverty and difficulty to develop useful discoveries and inventions. By energy, determination and perseverance, he surmounted all difficulties, and lived to receive honors and recognition from European Sovereigns and peoples, and from those who practically and constantly demonstrate the usefulness and value of his great invention in his native land.

To our readers we doubt whether we could present anything of greater interest at this time than the record which has so fully occupied the present and preceding issues of *THE TELEGRAPHER*. It is matter which should be preserved, and which in future times will add largely to the value and interest of the present volume of the telegraphers' organ.

Our limited space has compelled the omission of much that it would gratify us and our readers to publish. This we regret, but it was unavoidable.

As we turn from the tomb wherein the mortal remains of the deceased repose we are admonished that the day and the hour are not distant when we too must take our places in the silent halls of death; and to labor diligently that, like him, when the final summons comes, our work may be accomplished, and be ready to cheerfully resign the things of earth. And, if length of days be accorded us, may our old age like his, be vigorous and enjoyable.

In conversation with the deceased a few weeks since, his unusual vigor and healthfulness at his advanced age were remarked, and he explained it by saying that in his youth he did not draw drafts upon the future. He lived his life from day to day and year to year naturally and temperately, and in his later years he had no old claims of nature to liquidate by feebleness and the wasting of natural and mental vigor.

We commend his example and its results to the consideration of the members of the fraternity, especially those who are given to present pleasure at the risk of future physical and mental debility and suffering.

The American District Telegraph Company.—A Novel Enterprise.

A TELEGRAPHIC organization under the above name has been established in this city and Brooklyn, for the purpose of furnishing a private police and messenger service wherever required, and at a moment's notice, to the subscribers connected with the lines of the Company.

A telegraphic signalling instrument, of neat and tasteful appearance, in principle very similar to the well known fire alarm box, is placed in the residence or place of business of each subscriber, as may be required, connecting with a district office of the Company. By merely pressing upon a button any subscriber may summon a messenger or policeman, at any hour day or night, who will be at his door within three minutes from the time the signal was given.

Thus a person, awaking and becoming conscious of the presence of thieves in the building, may quietly touch a key at the head of his bed and summon assistance. Or, in case of sickness, he may have a messenger at the door in an equally short space of time, no matter at what hour of the day or night; or, if messengers are required for business purposes, they may be summoned in like manner, this being, perhaps, the most useful feature of this plan, and one which, if well carried out, will prove a great convenience to the business public.

The Brooklyn division is already in operation—its headquarters being situated at No. 185 Montague street, and a large number of instruments are already at work. Mr. L. H. SMITH, formerly Superintendent of the Bankers' and Brokers' Telegraph Company, has been appointed Superintendent of the Brooklyn District. As an instance of the value of such a system, it may be stated that a fire occurred a short time since in the Pierpont House, and assistance being promptly summoned by means of the district telegraph, by the druggist on the opposite corner, the flames were extinguished, and in all probability the building saved from destruction.

We shall take an early opportunity to lay before our readers a complete description of this novel and beautiful system, which is being extended with great rapidity, and will shortly rank among the established institutions of the cities where it is located.

The Early Struggles for Recognition to the Telegraph.

SINCE the world-wide development of the electric telegraph, and its recognition as one of the indispensable agents of modern times, we are apt to forget the prolonged struggle which it had in the outset, and the difficulties, opposition and indifference which were encountered and finally overcome by Prof. MORSE and his early associates. These facts have been brought forcibly to our recollection by the manuscript of an invitation given by Mr. EZRA CORNELL to the President and Professors of the University of New York, to attend an exhibition of MORSE's electro-magnetic telegraph, in 1845, which has been handed to us.

After the construction of the experimental line from Washington to Baltimore, and the practicability of the electric telegraph had been thoroughly tested, it was desired to extend the system to New York. The novel invention was regarded coldly by capitalists, and either opposed or regarded with indifference by those who might be supposed to be most deeply interested in its success. In order to bring the matter more prominently before the public, a short line was erected in this city from the Lyceum, 563 Broadway, to the Express Buildings, 112 Broadway, and a practical demonstration of the wonders of the novel invention given. The resources of the company had been entirely exhausted, so that they were unable to pay Mr. CORNELL for his services, and he charged visitors twenty-five cents for admission, so as to raise the funds necessary to pay expenses. Sufficient interest was lacking, however, to insure adequate patronage to defray the expenses of the exhibition. A number of invitations were issued to scientific, literary and other notabilities

to witness this exhibition, in hopes of popularizing it and making it a success. The following is a copy of the one referred to above, which is without date:

The subscriber respectfully invites the President and Professors of the University of the City of New York to visit the exhibition of MORSE's electro-magnetic telegraph.

As a subject of scientific and general interest, this telegraph at present occupies a prominent position in the public mind.

If you do me the honour to accept the above invitation, I would suggest that you visit the room at the Lyceum, 563 Broadway, at the same time that the President and Professors of Columbia College (who have also an invitation) visit the room at the Express Buildings. Time to be arranged between yourselves.

The above arrangement will make the arrangement quite agreeable to both parties, and afford you a better opportunity to test the capacity of the Telegraph.

By mentioning the terms to the students of your institution upon which they are invited to attend (as per bill), you will much oblige

Your ob't sv't,
(Signed), E. CORNELL.

The Proposed Memorial Services in Honor of the late Professor Morse.

As will be learned from the communication of our Washington correspondent, CAPITOL, arrangements have been made to hold imposing memorial services in honor of the late Professor MORSE in the Hall of the House of Representatives at Washington, on Tuesday evening next. If the arrangements proposed are fully carried out this will practically amount to a national demonstration worthy of the distinguished character and services of Professor MORSE. This general recognition of the high character and achievements of one who has rendered such great benefits to mankind is most honorable, and worthy of him and of the nation to which he belonged. A little more of this popular appreciation of the inestimable value of the telegraph in its early days would have obviated much of the difficulty and discouragement encountered in its introduction; but the honor is all the greater for having surmounted these difficulties and discouragements notwithstanding.

More fortunate than many benefactors of his species, Professor MORSE lived to enjoy the rewards of his labors, and the posthumous honors paid to him are not, as is too often the case, made over the tomb of a ruined and broken-hearted inventor.

Modern Practice of the Electric Telegraph.

THIS excellent work continues in good demand, and the fifth edition has nearly been disposed of by the publisher, Mr. VAN NOSTRAND.

It has recently been officially designated and adopted by the Signal Bureau of the U. S. A. as a textbook at the Camp of Instruction in Military Signalling and Telegraphy, at Fort Whipple, Va.

Copies will be forwarded by us on receipt of the price, \$2, by mail, postpaid.

Delayed but Not Rejected.

WE are again compelled, by the pressure upon our columns consequent upon the decease of Prof. MORSE, to omit several columns of communications, and other interesting matter prepared for the present number of *THE TELEGRAPHER*. We shall, probably, be able to find room for most of the delayed matter next week. In the meantime, our correspondents and contributors must exercise patience, and, above all, not get discouraged and weary in well doing.

Back Numbers of the Present Volume Wanted.

IN consequence of the demand for the numbers of the present volume of *THE TELEGRAPHER*, our supply of Number 289, for January 27th, is entirely exhausted, and we have but very few copies of Number 290, for February 3d.

Any of our friends who have either of these numbers to spare will confer a great favor on us by forwarding them to this office.

SIR FRANCIS RONALDS, now 90 years of age, is a member of the Society of Telegraph Engineers recently established in England. In 1818, Sir Francis proposed a system of electric telegraphy, and went to considerable expense in erecting miles of telegraph in his garden at Hammersmith. In 1823 he published a book, now very scarce, in which he said the day would come when the King, at Brighton, might communicate with his Ministers in London as quickly as if he were himself in the metropolis.

16,000 MILES OF "JOHNSON'S" WIRE USED BY THE TELEGRAPHS OF THE UNITED STATES DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
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Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

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This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

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" " " Brooks' Patent Paraffin Insulators.

Manufacturers of every description of

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THE RAILROAD GAZETTE.

TELEGRAPHERS will take a special interest in the discussion now carried on in the

RAILROAD GAZETTE

concerning the AMERICAN SYSTEM OF TRAIN DESPATCHING. The Gazette gives the fullest information in all departments of Railroad, and all the Railroad news.

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DAY'S KERITE COVERED WIRE.

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THIS SYSTEM OF

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WITH A CENTRAL OFFICE,

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UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

Albany, N. Y.,
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Boston, Mass.,
Bridgeport, Conn.,
Buffalo, N. Y.,
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Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
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Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
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Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
Washington, D. C.,
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The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM AND POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution therefor of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original FARMER & CHANNING PATENTS, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION OF CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

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These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

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a most compact and reliable Switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

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of the usual size, with KERITE COVER, believing that it will exceed, in insulation for submarine purposes, ANYTHING HITHERTO MANUFACTURED.

We shall be happy to furnish estimates for any amount and size of cable, which will be found to compete with any other construction, both in quality and price.

We manufacture the Genuine ELECTROPOION BATTERY, with Patent Platina Connection, introduced by us eight years since; also, THE ALPHABETICAL OR DIAL TELEGRAPH, now extensively used in this and other cities for private lines, being easily and quickly learned by any one.

We offer for sale, among other novelties, a SOUNDER that will work practically with a single DANIELL cell, a BATTERY that does not require to be taken down but once a year, and the very best MAIN LINE SOUNDERS made.

Our CATALOGUE, embracing a large amount of new matter and description, is now ready for distribution.

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TELEGRAPH LINE WIRE
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STEEL FOR
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Relative TENSILE STRENGTH, homogeneity and elasticity—decreasing the liability to breakage from cold weather, sleet, etc.;

Conductivity—insuring great improvement in the working of lines in any condition of the weather;

And in its DURABILITY, which greatly exceeds that of the best galvanized iron wire;

Altogether resulting in a very great reduction in the cost of maintaining and working telegraph lines, while, at the same time, insuring

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which are in use on the POLICE TELEGRAPH and many PRIVATE LINES in Boston and vicinity.

They require no Battery, and are always ready for use, thus avoiding the expense, trouble and uncertainty attending any Instruments to which Batteries are necessary. They are easily worked, having a straight Key-board, with a key for each letter and figure; are much more rapid than any Printers, and work well on LONG or SHORT LINES.

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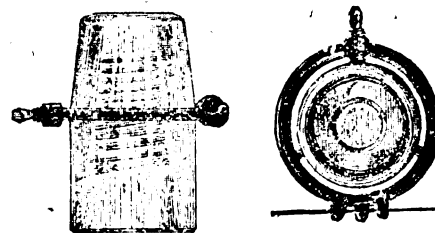
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The undersigned solicits examination of some of the reasons which have induced him to recommend to his patrons and friends the insulator exhibited above as the best and cheapest in use.

Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal.

As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

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While great care and attention has been given to Instruments and Insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European Governments, only fit for fencing purposes. Many tons of such material now remain here, utterly unsaleable and unfit for use.

The researches of the able electricians of Europe have resulted in establishing a standard of excellence for Telegraph Wire far exceeding that with which we have heretofore been satisfied.

We extract from the minute and specific details a few of the requirements of a

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1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch.)

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4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be coiled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications a breaking strain of 1,260 pounds or No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

We now offer for sale this Uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market, to which this system of tests is uniformly applied.

We shall designate it by the Trade Mark,

CHESTER, A 1,

and our customers ordering it may be sure of receiving an article always uniform, and always the very best.

The capacity or endurance of No. 9 is 21 to 23 TWISTS UPON ITSELF in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

COMPARATIVE AND COMPETITIVE TESTS

with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 29. The omission of the elongating process would increase the flexibility and the tenacity.

Although the wire has been proved IMMENSELY SUPERIOR to that commonly sold, its price will closely approximate to that of the inferior article.

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COTTON and SILK. Manufactured by

SAMUEL C. BISHOP,
at the Manufacturers' prices. Sole Agency in the United States
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GALVANIZED WIRES
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Long Lengths; Superior Quality; Low Prices.

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The superior quality of this Wire consists in its LIGHTNESS,
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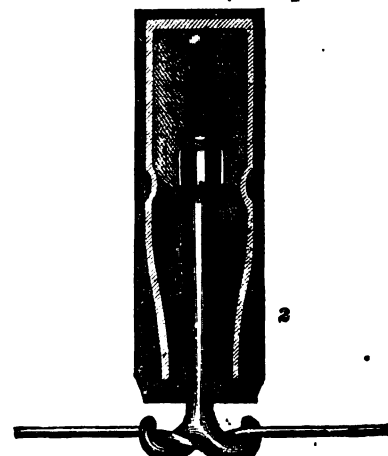
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The Telegrapher

A Journal of Electrical Progress.

Vol. VIII.—No. 35.

New York, Saturday, April 20, 1872.

Whole No. 301

THE MORSE MEMORIAL MEETING.

An Imposing Assemblage in Honor of the Father of the Telegraph at Washington, D. C.

THE impressive and imposing memorial services in honor of the late Professor Morse, which had been arranged to take place at the National Capital, took place on Tuesday evening last in the Hall of the House of Representatives in the Capitol. It was a complete success, and a manifestation honorable in the highest degree to the memory of the Father of the Telegraph. No labor or effort had been spared by the Committee of Arrangements appointed at the meeting of citizens and residents of Washington to make this the crowning honor to him whose inventions had so greatly contributed to the advance of civilization, and to the benefit and interests of his country and mankind.

It was felt that at the capital of his native land the memory of the deceased benefactor should be especially honored, and that the demonstration should partake of a national character. The Speaker of the popular branch of the National Legislature presided, assisted by the Vice-President of the United States, and the distinguished attendance of the highest officials of the nation gave to the assemblage a dignity and character which were most honorable to the deceased, and gratifying to his friends and fellow citizens. The hall was densely crowded in every part at an early hour, and many were unable to obtain admittance, thronging the corridors and ante-rooms.

The Speaker of the House of Representatives, Hon. James G. Blaine, presided, assisted by Hon. Schuyler Colfax, Vice-President of the United States. The President of the United States, members of the Cabinet, the judges of the Supreme Court of the United States, together with the Governors of the different States, either in person or represented by proxy, occupied seats which had been reserved for them on the inner semi-circle. The Senators and Representatives occupied the other seats on the main floor of the hall. In front of the main gallery was an oil painting of Professor Morse, and around the outer frame of the portrait was the text of the first message transmitted by the electro-magnetic telegraph, "WHAT HATH GOD WROUGHT."

Rev. Dr. Adams, of New York, opened the ceremonies with prayer, at the conclusion of which Speaker Blaine addressed the great assemblage, saying, "Less than thirty years ago, a man of genius and learning was an earnest petitioner before Congress for a small pecuniary aid, that enabled him to test certain occult theories of science which he had laboriously evolved. To-night the representatives of 40,000,000 of people assemble in their legislative hall to do homage and honor to the name of 'Morse.' Great discoverers and inventors rarely live to witness the full development and perfection of their mighty conceptions, but to him whose death we now mourn and whose fame we celebrate, it was in God's good providence vouchsafed otherwise. The little thread of wire placed as a timid experiment between the National Capital and a neighboring city grew, and lengthened, and multiplied, with almost the rapidity of the electric current that darted along its iron nerves, until within his own lifetime continent was bound unto continent, hemisphere answered through ocean's depths unto hemisphere, and an encircled globe flashed forth his eulogy in the unmatched elements of a grand achievement. Charged by the House of Representatives with the agreeable and honorable duty of presiding here, and of announcing the various participants in the exercises of the evening, I welcome to this hall those who join with us in this expressive tribute to the memory and to the merit of a great man."

The Marine Band, which was stationed in the gallery, followed Mr. Blaine's remarks with appropriate music, and performed at intervals during the further proceedings of the evening.

After some preliminary remarks, Hon. C. C. Cox, M. D., read a series of resolutions expressive of the sentiments of the meeting and of the country, and eulogistic of the character of the deceased as a man, of his talents as an inventor and discoverer, and as one of the "brightest stars in the firmament of science." Senator Patterson next addressed the meeting, recounting the early history of Professor Morse, and the

struggles and privations encountered before his great scientific triumph was achieved. The audience heartily applauded the speaker at the conclusion of his remarks.

The Choral Society, of Washington, then favored the audience with appropriate vocal music.

The Hon. Fernando Wood then gave a concise legislative history of the electro-magnetic Telegraph, and incidentally alluded to the fact that he was now the only member of the House who was a member at the time the first appropriation was made to test the invention. He was frequently applauded, and especially as he was among those who voted for the appropriation.

Gen. Garfield and the Hon. S. S. Cox next made short addresses.

The Speaker then said the telegraphic instrument at the desk was now working in direct communication with London, and he took pleasure in reading the telegram just received, namely:

"LONDON, 2 A. M., Wednesday, April 17.
"The Operators of England, Ireland and Scotland join with their American brethren in paying a tribute of respect to the memory of the founder of the Morse system, and offer their sympathy to the Morse Association in mourning the founder of their craft."

"WEATHERBEE,"
The reading was received with applause—especially that portion giving the date.

The concluding speeches were made by Messrs. Voorhees and Banks. Vocal music by the Choral Society, and the Benediction, by the Rev. Dr. Butler, Chaplain of the House of Representatives, closed the exercises at 11 o'clock.

DESPATCHES RECEIVED FROM OTHER CITIES.

The following are a few of the despatches received and read at the meeting:

"HONG KONG, April 16.
"The Hong Kong Chamber of Commerce learns, with most unfeigned regret, the death of Prof. Morse, and mourns this great loss to telegraphy and science."

"FULLER."
"CAIRO, EGYPT, April 16.
"The telegraphic staff in Egypt deplores the loss of the eminent Prof. Morse, who has rendered such valuable service to the Telegraphic extensions all over the world."

"GIBBS."
"MONTREAL, April 16.
"Montreal joins the distinguished assembly now at Washington in tendering its tribute to the memory of the immortal Morse, whose spirit hovers in our midst, and whose genius discovered the means of uniting, with electric fire, the world in one common brotherhood."

"CHARLES J. COURSAL Mayor."
"PRINCIPAL OFFICE, W. U. TELEGRAPH CO., }
"NEW YORK, April 16."

"While watching the service of the telegraph to-night, not only in conveying to you the many heartfelt greetings of great and good men most widely separated, but in the vast number of commercial and domestic messages flying in every direction over our wires, I desire to send on behalf of this, the largest of all American telegraph offices, and the last, I believe, which Prof. Morse ever visited, a tribute to his memory."

"A. S. BROWN, Manager N. Y. Office."
Telegrams were received from all the principal cities in the Union, in many of which meetings were held.

MEETING IN POUGHKEEPSIE, N. Y.

The Morse Homestead and Locust Grove, the summer residences of the late Professor Morse, are both situated in Poughkeepsie, New York, a fact which gave peculiar interest to the memorial meeting held in that city on Tuesday evening last, in the Presbyterian Church, which was densely packed, while many went away unable to gain admission. At the head of each aisle was a table thickly strewn with flowers. On the pulpit lay a beautiful floral crown, and beneath, upon a table, was a floral cross. The pew of the late Professor Morse was vacant, and hung in black. Mayor H. G. Eastman presided, and delivered an appropriate address reviewing the life of the great electrician, and warmly eulogizing his character. Addresses were also made by the Rev. John H. Raymond, President of Vassar

College; Edward H. Parker, M. D., and the Hon. John Thompson.

MEMORIAL MEETINGS ELSEWHERE.

In Faneuil Hall, Boston, Mass., a crowded meeting was held. Mayor Gaston presided. Meetings were also held at Salem, Worcester, and other towns of the State, at all of which highly eulogistic addresses were delivered and resolutions adopted. A meeting was held at Corinthian Hall, Rochester, N. Y., at which President Anderson, of Rochester University, presided. The citizens of New Haven, Conn., met and adopted a series of resolutions. Ex-President Fillmore presided at the meeting in Buffalo, N. Y., and William Cullen Bryant was elected secretary. Mr. Fillmore spoke of his acquaintance with the great inventor, and reviewed the many struggles and trials which were necessary to secure the success of the electric telegraph. The meeting at Louisville, Ky., was addressed by Professor Grant, Dr. Green and others. In Nashville, Tenn., the citizens met and adopted an appropriate despatch, which was sent to Washington. Many other meetings of a similar nature were held, all of which were in telegraphic communication with Washington.

ACTION OF NEW ORLEANS TELEGRAPH OPERATORS.

The operators of the Pacific and Atlantic telegraph, and those of the Fire and Police departments, of New Orleans, Louisiana, met Monday evening, April 8th, at the City Hall, to take action upon the death of Prof. S. F. B. Morse. Although invited, for some reason the employees of the Western Union office did not participate in the demonstration.

Mr. Charles A. Adams was called to the chair and Mr. T. J. Rodgers appointed secretary.

The following resolutions were proposed and unanimously adopted:

Resolved, That we learn, with the most profound feeling of regret, of the decease of our beloved master in the art telegraphic, Professor S. F. B. Morse, and that we unite most heartily in the universal expression of sorrow that swells up from all quarters of the civilized world, which, through his genius, has been made as one family.

Resolved, That while deploring the loss of a man so great and good, and while extending to his family our most sincere sympathies, we may congratulate them and ourselves upon the fact that he had lived to see the utmost realization of his hopes, and goes peacefully to his grave, ripe with years, rich with honors, mourned by continents and traduced by none.

Resolved, That his memory is too closely enshrined in our hearts to require any outward semblance of mourning.

Resolved, That our thanks are due to the Western Union Telegraph Directors; also, to Governor Hoffman, of New York, for the prompt and appropriate manner in which they acknowledged the world's loss.

Resolved, That a copy of these resolutions be forwarded to the family of the deceased, and to THE TELEGRAPHER and the Journal of the Telegraph.

After the adoption of which, the meeting adjourned.

RESOLUTIONS OF THE LOUISVILLE, KY., TELEGRAPHERS.

At a meeting of the telegraph operators of Louisville, Kentucky, held Wednesday, April 3d, the following resolutions were adopted:

Whereas, It has pleased the Divine Providence to call from our midst our dearly beloved and respected friend and benefactor, Professor S. F. B. Morse, the Father of the Telegraph:

Resolved, That in this bereavement the world has lost a scientific benefactor, a kind and noble man, an ornament not only to science, but to public and private life in all its phases; a loss which cannot be replaced.

Resolved, That we, the telegraph operators of this city, drape our instruments in mourning for a period of thirty days, and wear the usual badge of mourning for one week, as a token of esteem for the departed.

Resolved, That we hereby tender our sympathies to the bereaved family in their deep affliction, and earnestly pray that God will alleviate their grief and afford that consolation to their stricken hearts which He alone can give.

Resolved, That a copy of these resolutions be forwarded to THE TELEGRAPHER, the *Journal of the Telegraph*, and to each of the daily papers of this city, for publication. (Signed), L. SHELTON,
S. P. and A. Telg.,
AUGUSTUS MEADE,
N. DE BREE,
CHAS. SMITH,
W. U. Telg.,
Committee.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

A Caustic Reply to Don Coradan on the Management of the New Orleans W. U. Office.

NEW ORLEANS, LA., March 23.

TO THE EDITOR OF THE TELEGRAPHER.

SINCE the New Orleans operators of the Western Union Telegraph Company have been heard in refutation of certain grossly unjust assertions made against the social and business standing of their District Superintendent and others of their number, and put forward under a *nom de plume* in a late number of THE TELEGRAPHER, we, the receivers and clerks of the said Company, beg to have our say in the matter, and trust you will be so kind as to give us a hearing.

In your edition of the 2d instant, there appears a letter dated "New Orleans, Feb. 16," and signed "Don Coradan." Now, everybody knows that "Don Coradan" is an assumed name; but everybody does not know who it is that assumes it, and why it is that any one should thus feel himself called upon to make war upon the reputation of a community of gentlemen, not one of whom is conscious of having injured a living being, either in person, property or name! And not one of whom, I am sure, is so uncharitably disposed to his fellow man as to return Don Coradan evil for evil, though he were at this moment in their power. Nor shall we "set down aught in malice" against him, since we hold to the axiom that

"Slander, that worst of poisons, ever finds
An easy entrance to ignoble minds."

Don Coradan speaks for himself after the following fashion:

"The egotistic and self-sufficient manager of the W. U. here got badly taken down at the Cotton Exchange a short time since. Looking, in his overweening self-confidence, upon any other company as an intruder upon whom his highness could not stoop to waste a thought, he drew up articles of agreement, or a set of regulations, in regard to the telegraph service of the Exchange, which he submitted to the President. That functionary and his coadjutors found the demands so impertinent and exacting that it was impossible to accept them, and they, in turn, drew up a document, in which a more moderate and conciliatory course was indicated than the impertinences of the selfish manager deserved; but it was of no use—the stubborn Shamus could not for a moment entertain it. The result of his egotistic stupidity was to incense all the members of the Exchange, and procure for himself a short and peremptory order to take his instruments and get out of the building. How will the stockholders like that? The P. and A. immediately moved in, and are getting along smoothly, and giving universal satisfaction. Methinks that Mr. Flanery's course, in wilfully alienating the mercantile community from the W. U. lines, in view of the competition, present and prospective, will not find much favor at headquarters.

"The Gold and Stock Co. have 44 instruments in operation, which, I understand, give entire satisfaction to the subscribers."

Upon having read the foregoing, the President of the New Orleans Cotton Exchange, to whom one of us submitted it, instantly and with indignant vehemence exclaimed: "It's a lie!—every word of it." This our colleague heard with his own ears, and he subsequently received the following letter from the President's own hand, to be forwarded to the Editor of THE TELEGRAPHER:

"NEW ORLEANS COTTON EXCHANGE,
"March 19, 1872."

"Editor Telegrapher.

"My attention having been called to a communication published in your issue of 2d, over the signature of "Don Coradan," I beg to say that so far as that article reflects on Mr. Flanery, Sup't W. U. Telegraph in this city, it does him great injustice, and has no foundation in fact.

"The business of the Cotton Exchange was performed by the W. U. Telegraph Co. for almost a year, to the entire satisfaction of the Exchange; and it was only when the Commercial News Department demanded the use of the special telegrams" to the Exchange that there was any dissatisfaction. This was a matter with which Mr. Flanery had nothing to do, except to obey the orders of his superior officers.

"There is no gentleman in this city less liable to the

charge of 'impertinence' than Mr. Flanery, who is universally esteemed as a modest gentleman of sterling integrity and very liberal views; and, in my opinion, one of the best Superintendents in the Union.

"Respectfully,
E. H. SUMMERS,
President N. O. Cotton Exchange."

Mr. Summers "speaks poinards, and every word stabs." Alas, for the hapless Coradan! If his disguise is not penetrated his armor is.

It was never the business of the "Manager of the W. U." to direct the affairs of the company at the Exchange. That duty devolved on the Superintendent. It will not do to say that the terms are identical in meaning, for, according to the telegraphic acceptance, they are understood, and meant to be understood, in a widely different sense.

Is it unreasonable, therefore, to inquire whether he who cannot or will not distinguish a Superintendent from a Manager, can or will distinguish the natural and necessary self-respect and mental dignity of a gentleman long in authority from the "egotistic and self-sufficient" airs of a vain man suddenly raised to power?

Again, "The P. and A. immediately moved in," upon the opening of the New Exchange, the 1st of November—three months earlier than the time stated by Coradan, and previous to the withdrawal of the Western Union operator! A slight difference this.

And again, Mr. Flanery is represented as "wilfully alienating the mercantile community from the W. U. lines." Here the Don would have us to believe him capable of reading a man's very thoughts! Talk of "egotistic stupidity" after that! But who and where are the merchants at all alienated—wilfully or otherwise—by Mr. Flanery or his course? Who or what can they be that constitute this alienated Coradanean community? Verily, they are and can be nothing else but the creation of a sorry fancy—strange phantoms conjured up by a soured imagination.

Elsewhere in his letter "Don Coradan" has something to say of what he calls the "superciliousness of the W. U. management here." The "W. U. management here" was a superintendent when the oldest of us first met him in this city, seventeen years ago. That office he held and holds to the present day.

The Southwestern Company waxed fat under his administration in the face of a sharp and powerful opposition in ante-bellum times. The business he controls to-day does not wane in the face of the new opposition, nor do his popularity nor his shadow grow less.

Never did a customer go away dissatisfied after having an interview with him; and his subordinates in office are now, as they have ever been, affectionately attached to his person. These are not the kind of consequences that proceed from a "supercilious management." But, above all, let me ask how long and to what extent could "superciliousness" have held sway under the supervisory eye of a man like John Van Horne, of whom it is said "He can see through a mill-stone?"

And, finally, Don Coradan, still spoiling for a fight, looks into the Western Union offices here and resolves on having a stab at the receivers and delivery clerks. He aims the blow in this wise:

"Short and unsatisfactory responses, if any at all, are the rule there."

And we parry it thus: Some of us have been in office five, some ten, and some seventeen consecutive years. If Don Coradan seeks to persuade intelligent beings that dummies or surly bores could have worked themselves in and held these positions so long, he is a silly man, and leaves himself liable to the imputation of "egotistic stupidity." That's all.

We are, with great respect, your obedient servants,
L. A. EYEN,
PATRICK MOLONY,
ROBERT PARSONS,
CHARLES J. ALLEYN,
T. F. HOOPER,

Receivers.

M. D. GARDNER,
C. J. HAIGHT,
P. J. SULLIVAN,
JOHN R. GARDNER,

Delivery Clerks.

JAMES T. ALLEYN, Cashier.
M. P. WALSH, Bookkeeper.
ALBERT ENGLISH,
S. L. ADAM,
E. J. ADAM,
GEORGE M. NUGENT,
P. J. MURPHY,
SIMON FITZPATRICK,

Clerks.

Hardships of Canadian Telegraphers.—Necessity for a Telegraphic Organization.

TORONTO, April 12.

TO THE EDITOR OF THE TELEGRAPHER.

A GREAT many articles have of late appeared in your columns relative to the organization of another Union. We (Canadians) have been anxiously waiting for something to be done in the matter. We now see that something must soon be done, or the telegraph companies here in this little country of ours will have us in a bad fix. As it is now, an operator discharged from the Montreal Company will not be engaged by

the Dominion Company, and vice versa; as an agreement has been made between the two companies to engage no operators who have been discharged from either company. But this is not our worse complaint: If an operator, leaving the Montreal Company to engage with the Dominion, tenders his resignation, it will not be accepted; but he will be told he must remain, and, if he leaves, all will be done that possibly can be to prevent him from getting another situation. Two such cases have lately occurred, one of which was in Montreal, where the operator, wishing to leave, gave two months' notice, and when he did leave was refused any letters or character, the only cause for refusal being his leaving. Now, when an operator in Canada is discharged from either of the commercial lines nothing remains for him to do but accept a railway position, or leave for the other side of the lines; and as the Montreal Company engage most of the railway men it is no easy matter to get a situation on a railway. Gentlemen, the time has come for something to be done. We have been waiting for our brothers across the lines to move in the matter, and then we are with you one and all; but you must hurry, my American cousins, or we will be before you, as we see we cannot wait much longer. Now, don't let little Canada be ahead.

CANUCK.

A Reply to "Hindoo," and Defence of the American System of Train Dispatching

OUT WEST, March 30.

TO THE EDITOR OF THE TELEGRAPHER.

I HAVE read and re-read your editorial of March 23, and "Hindoo's" communication in the same paper, and have also read the article in the *Railroad Gazette* of March 2, to which "Hindoo" refers. First, in regard to the Indian system—that "cumbersome" one, which "Hindoo" pronounces "absolutely safe against even unintentional errors"—I suppose hardly any system would be safe against intentional error; but I fail to see where the Indian system secures such absolute safety. Referring to "Hindoo's" letter in THE TELEGRAPHER, I find the following: "M." says—"Is not the station master as liable to make mistakes as the operator? Precisely so; therefore the system should provide against such liability." And yet this "absolutely safe" system of India is in the hands of these very men, who, though they may be "the very best of men, are liable to err." Might not the "line clear" order be an error? Might not the conductor leave a station without his "line clear" order? What did "Hindoo" find to be the practical working of the system? Did he ever know of a collision there? He says the American system, if introduced on the Indian roads with the present personnel, would close them in six months. This is certainly a compliment to American railroad employes. But, let me ask, would not the Indian system introduced on American roads close them in three months, by blocking, delaying and complicating the business.

Now, to come home to our own system, "Hindoo," referring to orders to conductors, says—"What about the driver?" All orders in regard to the movements of a train are addressed to conductor and engineer, and the reply must be signed by both, and both are held responsible for the proper execution of the orders. Now, is it not much more likely that a conductor and engineer, who write out their "understanding" of an order, signing their names to it, will be impressed with the meaning of the order, and remember it in detail more distinctly, than if they had simply read it and compared it with a book copy. Who does not know that writing a sentence over assists to memorize it? It is to make certain that they understand orders, and to make them remember them also, though, as "Hindoo" justly claims, the order cannot well be misunderstood if a dispatcher understands his business. Let us look at the examples of accidents given by "Hindoo." Example 1.—Conductor neglects to give order to engineer. Impossible, unless the conductor forges the signature of the engineer to the "understanding." Example 2.—Agent neglects to hold a train, for some reason. This might occur, but how are we to remedy it? The book suggestion of "Hindoo" certainly will not answer, as the operator may neglect to deliver his order, as well as an agent neglect to hold a train. Example 3.—No. 2 has still 10.40 to make P. for No. 1, failing which, goes "by rule." Engine becomes disabled, or some other good cause delays them, and they cannot get to P. at 10.40. What does "go by rule" mean in that case? They are now on the time of No. 1, and an imperative rule on all roads in my experience is about as follows: Whenever a train is unavoidably delayed, so as to prevent its reaching a station except on the time of another train, a man must be sent well in advance at once with a flag, to stop the expected train. Example 4.—We come back again to the starting point—the reliability of your men in this case of your *train dispatcher*. To my mind the whole question lies here. These lives and this property must be under the control of some one. Shall it be a single man, selected for ability, good judgment, clear headedness and sobriety, or shall it be a hundred men, 99 of whom may possibly be all this, and the hundredth one be the stupid, unreliable man we all know, but having an equal care and responsibility with the others. I have taken up so much space already I must cut off my correspondence that "Hindoo" calls for, and only say that I have had one collision, with no particular damage, in three years' time, the same as in his Example No. 2. The

* These specials belonged in common to all of the Gold and Stock Company's subscribers, hence the company demanded that all the subscribers—including the Cotton Exchange—should be accorded the simultaneous use of the despatches.

agent neglected to hold train. I can only add that my confidence in the American system, as I understand it, is unshaken, and I see no advantage in the suggestions made by "Hindoo," as far as safety is concerned.

Telegraphic Prospects.—Return and Welcome of an Old Friend.

PHILADELPHIA, April 9.

TO THE EDITOR OF THE TELEGRAPH.

NOTHING of interest or importance, telegraphically, has transpired since my last communication. The business is assuming a favorable aspect, and the companies competing with the Western Union are increasing their business constantly, so much so in fact as to necessitate the construction of additional wires between this city and New York to accommodate it.

Our many friends, who are in receipt of the only and reliable organ of the fraternity, THE TELEGRAPH, will be pleased to hear of the safe arrival of our old friend, Mr. E. R. Adams, on Monday, from his South-western home, on a visit. One year ago he severed his connection with us to accept a position with the Western Union Company at Sedalia, Missouri. Before leaving for Missouri, Mr. Adams secured as a wife one of the fairest of the daughters of Reading, Pa., and his present visit to Pennsylvania is to take her with him to his new home.

Our meeting was a very agreeable surprise, but none the less welcome on that account. He is deservedly popular with all with whom he is brought in contact, and has the sincere and hearty good will of all who know him, and their best wishes for the happiness of himself and his amiable wife in their new home. O.

Personals.

Mr. M. D. CRAIN, of St. Louis, Mo., is chief operator of the Atlantic and Pacific, and Great Western Telegraph office at Omaha, Nebraska.

Mr. P. J. McKRON is night manager of the A. and P. and Great Western Telegraph office at Omaha, Neb.

Mr. F. J. PHIPPEN has accepted a position with the Great Western Telegraph Co. at Omaha, Neb.

Mr. M. M. TOWNE, of the C. and N. Co. Railway Telegraph at Boone, Iowa, desires to obtain the present address of Mr. E. S. BRADMILLER, as he has letters for him, and information that it would be to his advantage to receive.

Mr. LEVALLY, of the Pacific and Atlantic Company's main office at Chicago, Ill., has accepted a position in the Atlantic and Pacific main office in that city.

Mr. C. H. HASKINS has resigned his position of Superintendent of the Mississippi Division of the Pacific and Atlantic Company, and accepted a position as Superintendent of the Northwestern Company's line.

Mr. O. C. CAMP, assistant chief operator of the P. and A. Pittsburgh, Pa., office, is acting Superintendent of the Mississippi Division, vice HASKINS resigned.

Mr. FOX, late of the Boston, Mass., W. U. office, has accepted the position of chief operator of the A. and P. Co.'s Chicago, Ill., office.

Mr. CURTIS D. MESSERVE, who has been wintering in New Orleans, La., has returned to Chicago, Ill., and accepted a position in the Western Union main office.

Mr. EDDIE FOOTE, of the W. U. New York office, has accepted a position on the W. U. night force at Chicago.

Mr. ALFRED LINCOLN, of the Western Union day force, in the Chicago, Ill., office, has resigned and accepted the position of train despatcher at Ottumwa, Iowa, on the Burlington and Missouri R. R.

Mr. JAMES B. FARRELL, of Wabash avenue, Chicago, Ill., Western Union office, has resigned and gone to Virginia City, Nevada.

Mr. OLEM GREEN, who has been operating in the Memphis, Tenn., W. U. office during the winter, passed through Chicago, Ill., on the 8th inst., on his way to Minnesota.

Mr. H. McMILLAN, of the Western Union Chicago, Ill., day force, has resigned and gone into the photographic business with his brother.

Mr. E. N. SNIPER, assistant Manager of the Western Union, Chicago, Ill., night force, has resigned.

Mr. BROWN, of the St. Louis P. and A. office, has accepted a position on the day force of the same Company at Chicago, Ill.

Mr. EDWARD B. LONG, who has for the last five years been Manager of the Atlantic and Pacific Telegraph office at White Plains, N. Y., has recently been elected justice of the peace for that town. The *Democratic Register*, of Sing Sing, although politically opposed to him, speaks very highly of him, and congratulates him on this merited compliment from his fellow-citizens.

Mr. D. CRISWOLD has resigned his situation as operator W. U. Telegraph, and agent for Flint and Pere Marquette R. R., at Birch Run, Mich., and engaged in the lumber business at East Saginaw, Mich.

Over three thousand five hundred new books appeared in England last year.

A Wisconsin editor speaks of a wind which "just sat down on his hind legs and howled."

The Telegraph.

By Cable.

PROSPECTIVE ATLANTIC TELEGRAPH CABLES.

LONDON, April 11.—The French Transatlantic Telegraph Company have concluded a contract with the Telegraph Maintenance and Construction Company for the laying of a fourth line of telegraphic cable between Europe and America. A prospectus of the American Atlantic Telegraph Company, proposing to lay a cable from Milford Haven, on the coast of Wales, to Rye Beach, N. H., direct, will be issued next week.

The press generally expresses great satisfaction at the prospect of cheaper rates through the multiplying of the means of telegraphic communication between Europe and America.

RATIFICATION OF THE INTERNATIONAL TELEGRAPH CONVENTION.

BERNE, SWITZERLAND, April 12.—The Federal Council have ratified the International Convention concluded by the Telegraph Congress held at Rome in December last.

The Duxbury and St. Pierre Cable Repaired.

THE Secretary of the French Atlantic Cable Company gives notice that the fault in the Duxbury and St. Pierre Cable of that company has been repaired by the Superintendent.

New Office for the Pacific and Atlantic Telegraph Company.

THE building now occupied by the Pacific and Atlantic Telegraph Company for offices, at the corner of Wall and Broad streets, in this city, having been sold to be removed after the first of May next, to give place to a new block of buildings, to be erected on its site, it has become necessary to secure a new location for the central office of that company. Accordingly, Messrs. Geo. H. Thurston, President, and D. McCargo, General Supt. of the Company, visited this city on Saturday last, and with the manager of the office, Mr. Hall, selected offices at No. 14 Broad street, adjoining the Stock Exchange, which will be fitted up and occupied by the company on or before the first of May. We shall give a description of the new offices when the company have fitted them up and taken possession.

The Pacific and Atlantic Company's lines now extend South to New Orleans, La.; West to St. Louis, Mo., and Northwest to St. Paul, Minnesota.

Foreign Telegraphic Notes.

We learn from Vienna that the experiment of appointing forty young women as operators in the State telegraph offices in Austria has proved a complete success. They behave themselves with so much modesty and decorum, are so much to be depended on, and do their work so nimbly and with such perfect ease, that the Government intend to employ a considerable more when vacancies occur.

The directors of the British Indian Extension Telegraph Company have declared a dividend of two per cent., making, with the interim distribution of six per cent., a total of eight per cent. for the year ended December 31, 1871.

Telegraphic Brevities.

THE wires of the Atlantic and Pacific, and of the Great Western Telegraph companies have been successfully placed on the Omaha Bridge over the Missouri River. This dispenses with mast crossings that for years have caused much delay and expense to keep in repair. The Western Union will continue to use masts for crossing their wires, having failed to secure a privilege over the bridge.

The Great Western Telegraph Company is now working a circuit from Chicago, Ill., to Lawrence, Kansas, a distance by line of nearly 1,000 miles. The wire used is the American Compound Telegraph Wire, and the battery Dr. Hill's. This is probably as long, or longer, than any circuit heretofore successfully worked.

On the evening of March 29th last, Mr. G. Merrill, of the Chicago, Ill., Western Union office night force, sent direct to San Francisco, Cal., without a break, 2,000 words press report in one hour and fifteen minutes. All the intermediate stations that usually take the press report were in circuit and receiving it at the same time. Considering the distance, number of repeaters in the circuit, etc., this feat cannot easily be paralleled.

The Missouri, Kansas and Texas railway is being pushed through the Indian Territory, expecting to reach Texas this season, and the telegraph is kept up to the front as the work progresses.

The Atchison, Topeka and Santa Fe railroad will add upwards of 100 miles to its telegraph this season.

The Atchison and Nebraska railroad, with about ninety miles of road, and expecting to reach Lincoln, Nebraska, about July next, has no telegraph as yet, but it is expected will commence building a line along the road soon.

The Western Union Telegraph Company have leased the brick building next south of the post office, in Newport, R. I., and will occupy it as soon as it can be fitted up for their business.

Too Deep for That.

"Yes," said Farmer Brown, Bringing his hard hat down On the old oak table; "They say that men can talk, From Paris to New York, Through the sunken cable."

"'Tis perfectly absurd— For to hear a single word No man is able; And it's clear enough to me That this wide-spread mystery Is a foolish fable."

"The news we get from Rome Is all made up at home, 'Tis my conviction; And that you see, will account For the terrible amount Of contradiction."

"Yes," said Farmer Brown, Bringing his hard hat down, On that old oak table; "My wife and I have tried The experiment; we tied A good, stout bit of cable."

"To the fence just over there, And the rocker of this chair, And we couldn't do it, Though we screamed ourselves as hoarse As tree toads, but of course Not one word went through it."

"Don't talk to me, I pray, Of fresh news every day Through sunken cables, Sea yarns are long and tough, And I have heard enough Of such old fables."

New Patents.

For the week ending April 9, 1872, and each bearing that date.

No. 125,387.—DISTRIBUTING ELECTRICITY FOR GAS LIGHTING AND FOR OTHER PURPOSES. Samuel Gardiner, Jr., New York, N. Y.

1. The manner of supplying to a city electricity conducted through main wires having laterals running into dwellings and other places, as and for the purpose set forth.

2. The resistors a, a, located and arranged as shown and described, for the purpose set forth.

3. A general local battery, for supplying electricity through main and lateral wires, for various purposes, as set forth.

No. 125,504.—ELECTRO-MAGNETIC ENGINE. William G. Thornton, Victoria, Texas.

1. The combination of the lever A with electro-magnets and with air-pump or bellows, substantially as herein shown and described.

2. The armatures G G, suspended by scale-pivots d from the lever A, which carries the guards f, substantially as herein shown and described.

3. The frame I, having the screws A and C, and combined with the lever J, as set forth.

4. The magnets E E, armatures G G, lever A, frame I, and lever J, all combined with each other, substantially as herein shown and described.

No. 125,582.—ELECTRIC TELEGRAPH APPARATUS. George Little, Rutherford Park, N. J.

1. The adjustable magnets and swinging armature, substantially as set forth, in combination with a recording pen or stylus, and mechanism for moving the paper, substantially as set forth.

2. The swinging armature a, in combination with the circuit-closers 50 51, electro-magnets c, d, constant circuit connections and transmitting-roller or stylus e', substantially as specified.

3. Two constant circuits, regulated by adjustable rheostats, and acting in electro-magnets, in combination with a perforated paper transmitting apparatus, a main line circuit, and vibrating armature circuit-breaker, substantially as set forth.

4. Two electro-magnets and their constant circuits, arranged in a main-line circuit, substantially as set forth, so that the main current of one polarity intensifies one magnet and lessens the power of the other, as set forth, and the reverse as the polarity is changed, as specified.

5. A condenser, in combination with electro-magnets, rheostats, and constant circuits, substantially as set forth.

6. A perforated paper transmitting apparatus, in combination with two electro-magnets, a swinging armature and constant circuits, substantially as set forth, whereby the armature is made to vibrate by the varying power of the electro-magnets resulting from the perforated paper opening and closing one of the circuits, substantially as set forth.

7. A vibrating stylus, moved by the main-line current acting in an electro-magnet, in combination with a local circuit that is closed by the contact of the stylus with the chemical paper and the reverse, substantially as set forth.

No. 125,583.—PRINTING TELEGRAPH. George Little, Rutherford Park, N. J.

1. An iron type-wheel, polarized by an induction-coil, in combination with a magnet to effect the impression when the polarity of the type-wheel is changed by reversing the electrical circuit, substantially as set forth.

2. The type-wheel upon an arbor running through a coil and provided with a swinging clamp or feed to move the type-wheel, in combination with an electro-magnet that operates the said means for moving the type-wheel, substantially as set forth.

3. The electro-magnet m', set to swing and carry the armature w', and impression-roller i', in combination with the type-wheel, as and for the purposes specified.

4. A magnetized type-wheel, in combination with the swinging electro-magnet to effect the impression and feed of the paper when the polarity is reversed, substantially as specified.

5. Two or more magnetized type-wheels in one electric circuit and revolving in unison by pulsations from the transmitting instruments, substantially as specified.

No. 125,587.—TELEGRAPHING BY CONSTANT CIRCUITS. George Little, Rutherford Park, N. J.

1. A battery connected constantly with the main line and a shunt circuit from the same battery, so as to operate the main line circuit by breaking the shunt circuit, substantially as specified.

2. A constant reverse circuit and a secondary and shunt-circuit, in combination with the constant main line and shunt circuit, substantially as set forth.

Married.

HATWOOD—KELLEY.—At Detroit, Michigan, April 9th, 1872, by the Rev. Mr. McElwain, GEORGE W. HATWOOD, of the Atlantic and Pacific Telegraph Company, to MISS SARAH KELLEY, of Detroit. No cards.—No cake.—No nothing.

Died.

McELHANNY.—To A. T. McELHANNY, manager of the Western Union, Bloomington, Ill., office, March 24, a son.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, APRIL 20, 1872.

The Telegraphers' Association Question.

SEVERAL of our correspondents have become impatient at the apparently useless discussion of the proposition for a new association of the telegraphers in the United States and Canada. This is not surprising, for those who are thoroughly in earnest in the matter and really desirous of accomplishing something which shall prove beneficial are apparently few in number and widely scattered, and the prospect of any actual movement in the desired direction does not seem to be very encouraging.

We are now, as we always have been, of the opinion that there should be an association of the practical telegraphers of the country for mutual benefit and support. In no other business or profession of equal extent and importance is there such entire lack of unanimity as in the telegraphic. All efforts to maintain associations among the telegraphers hitherto have failed, from causes which are too well known to require re-statement at this time. As has been truly said by one or two of our correspondents, discussion and writing communications alone will not suffice to accomplish the desired result.

We have watched this discussion attentively, and, so far as we have had opportunity, have endeavored to get at the real sentiments of the fraternity on the subject. The conclusion at which we have arrived is that up to the present time there has been developed no such deep seated desire for and determination to establish such an association among telegraphers as will suffice to establish or maintain it. With very few exceptions, none are prepared to take the lead in such a movement. It would, without doubt, at the outset encounter the opposition of telegraph managers, and few are prepared to take the risk of identification as leaders in the enterprise. This is to be regretted, but it is a fact, nevertheless, and one which it is useless to shirk. The greatest possible folly is for any person or class of persons to be self-deceived.

If, upon a calm and sensible consideration of all the premises, any number of the fraternity, however small, should decide to go on and organize an association, and will persevere against the discouragements which they are sure to encounter from open enemies and timid and lukewarm friends, we believe that in time an organization may be established which will have a very beneficial influence upon the future of the profession. It will be an arduous work, however, and at first the progress will be very slow. One difficulty, and an important one, will be avoided, however, as it will not be necessary to establish an organ—THE TELEGRAPHER, now as heretofore, being ready to coöperate in any movement which has for its object the advancement of the interests and welfare of the practical telegraphers everywhere.

As one of our correspondents very justly observes, it is folly to talk about, discuss and differ as to the policy of such an organization in advance. It should be understood, however, from the start that no proscriptive or unreasonable policy or course is to be adopted, or can succeed. The real interests of telegraph managers and employers are identical with those of the employés, and it should be the aim of any association established, to coöperate with the managers for the mutual interests of all concerned. Common sense and moderation on both sides are required to solve the difficult problems which now, to a considerable degree, embitter and embarrass the relations of telegraphic as well as of other capitalists and employés. Can there be no means devised by which the exercise of these may be secured?

THE scholars are now wrestling over "haligram," "thalasagram" and "onagram," to define a message sent by cable.

The Morse Memorial Meetings.

OUR columns are again this week occupied to a considerable extent with the record of the posthumous honors paid to the late Professor MORSE. The record is now, however, substantially closed. We turn from the tomb to which his mortal remains have been committed, and henceforth he becomes a memory, ceasing to be present with us a living, personal reality as heretofore. The outpouring of national sorrow at his departure, expected though it was in the course of nature for one whose life had been protracted beyond the ordinary experience of men, and the spontaneous honors which have been paid to his memory, prove that by the present generation his services to his race have been fully appreciated. We have, as fully as our limited space would permit, placed these manifestations on record in THE TELEGRAPHER, not only for the present, but for preservation for the future.

The great Memorial Service at Washington on Tuesday evening last, in the hall of the House of Representatives, assumed a national character, and was a fitting close to the honors paid to his name and memory in his native land. To Prof. MORSE while living, however, the compliments most prized and the appreciation most highly valued was that of the practical administrators of the wonderful telegraphic art; and we doubt not that, could he know of the demonstrations of honor and respect paid to his memory, those which we have published from the practical telegraphers—the telegraphic employés of the country—would be to him the most gratifying.

To Managers of Railroads.

AN able and experienced telegraph manager and superintendent, who is now engaged as telegraph manager and train despatcher on an important Western railroad, would like to obtain a situation in the telegraph department of some road at the East. He is well known to us personally, and we have no hesitation in recommending him as qualified in every respect to fill a leading situation with credit and advantage to his employers and himself.

The managers of any telegraph line who may have occasion for his services will be fortunate in securing them.

His address may be obtained from the editor of THE TELEGRAPHER. The only reason for the change on his part is the desire to return to the East, in which section he belongs.

A Through Circuit from Washington, D. C., to San Francisco, Cal.

THE Atlantic and Pacific Telegraph Company on Tuesday night last made up a through circuit from San Francisco, Cal., to Washington, connecting through the Franklin line from New York into the House of Representatives, while the Morse memorial meeting was in session. The circuit worked perfectly, and messages were transmitted to and read at the meeting from Mayor Alvord, of San Francisco, and Brigham Young, of Salt Lake, Utah.

Chester, Partrick & Co.

On Saturday morning, April 13th, fire was discovered in the fourth story of the building, No. 38 South Fourth street, Philadelphia, Pa. Considerable damage was done by fire and water to the upper stories of the building. The lower floor was occupied by Messrs. CHESTER, PARTRICK & Co., telegraphic and electrical engineers. They suffer a loss of not more than \$500 from water only, and are insured to the amount of \$3,000 in the Commercial Union. The damage to Messrs. CHESTER, PARTRICK & Co.'s premises and stock has been repaired, and they have taken advantage of the opportunity to introduce improvements which enable them to work more advantageously than before, and greatly facilitates their large and increasing business.

Extensions of the Atlantic and Pacific Telegraph Company's Lines, and Increase of Facilities.

THE managers of the Atlantic and Pacific Telegraph Company, realizing the necessity which existed for a material increase of facilities and extension of its lines to provide for a larger and more profitable business, and for the better accommodation of customers and the public, at the commencement of the present year

marked out an important programme of operations to secure them. The following statement, obtained from Mr. E. D. L. SWEET, the General Superintendent of the company, under whose personal direction and supervision they have been inaugurated and are now being carried out, will show the extent and importance of these additions and improvements, the beneficial effects of which it is stated are already materially experienced in the business of the company. The only drawback upon them is that the company still adheres to glass insulation; but, as its managers are evidently progressive in their ideas, we have hopes that the time is not distant when they will discard this, and adopt some more effective and reliable system of insulation.

Under a contract between the Atlantic and Pacific Telegraph Company and the New York and Oswego Midland Railroad Company, the telegraph lines upon that road, which have recently been constructed under the direction of Mr. W. H. WEED, the capable and efficient Superintendent of Telegraphs of the railroad company, are embraced as a part of the system of the Atlantic and Pacific company, and are worked by that company at all joint offices. Under this arrangement the Atlantic and Pacific Company have acquired the right of erecting one or more wires upon the poles of the railroad company for the transaction of *through* business. A new cable manufactured by Mr. S. C. BISHOP, of this city, who, as is generally acknowledged, manufactures the best telegraph cables for river crossings made anywhere, is now being laid by the Atlantic and Pacific Company across the North River. This is a three wire cable, and one of the best made by Mr. BISHOP. The lines on the Midland Railroad form a district which remains under the superintendence of Mr. W. H. WEED.

The telegraph and railroad companies are putting up two additional through wires between New York and Oswego. All the materials have been purchased and the work is being done as rapidly as possible. One of these wires will be extended from Oneida, by way of Auburn, to Buffalo.

For the purpose of connecting with the Dominion Telegraph Company of Canada, a line of two wires has been contracted to be built from Oswego to Ogdensburg, N. Y., so as to secure *direct* connection between New York City and Montreal.

The Atlantic and Pacific Company have also purchased materials for lines which are in process of construction from Springfield, Ohio, to Columbus, Ohio, the capital of the State; and from Detroit, Mich., to Chicago, Ill., through Central Michigan, taking in Kalamazoo, Jackson, and other important and rapidly growing places. This, in connection with the lines through Canada, will secure a double route from New York to Chicago.

The American Fire Alarm Telegraph.

THE only reliable system of Fire Alarm Telegraph—that owned by Messrs. GAMEWELL & Co., of this city—continues to progress, and occupy one after another the places yet unprovided with such facilities. The present promises to be a very busy season with GAMEWELL & Co. Contracts have just been closed with the Municipal authorities of Memphis, Tenn., and Manchester, N. H., for the introduction of the system in those cities. Their success is fully deserved.

Miscellaneous.

COVERING WIRE WITH RUBBER, ETC.—A foreign exchange describes as follows a new invention for covering wire with India-rubber and similar substances, and for making tubing of the same: "The machine, more particularly designed for covering telegraph wire with insulating material, comprises a cylinder for holding the India-rubber or other gummy substance, and in this cylinder a screw of the same or nearly the same diameter extends through one end, and is supported in bearings and rotated by gearing applied outside the cylinder. At one end of the cylinder is placed the die, through which the substance or compound is forced to form the covering or tube, and through which the wire and the substance pass together. The die is arranged at a right angle to the axis of the cylinder, so that the wire passes transversely across the end of the screw or at a right angle to its axis. In a line with the die and inserted through the opposite side of the extension piece is a tubular guide, through which the wire to be covered is admitted and passed to the die. At the rear end of the machine is placed a thrust-pin to receive and sustain the end of the screw against the back pressure. The thrust-pin is formed with a screw-thread, and is thereby adjustable in a socket fixed on the machine."

16,000 MILES OF "JOHNSON'S" WIRE

USED BY THE
TELEGRAPHS OF THE UNITED STATES
DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
MANCHESTER, ENGLAND.

Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

TELEGRAPH LINES
OF ANY LENGTH FULLY EQUIPPED WITH
WIRE, INSULATORS, BATTERIES,
INSTRUMENTS, ETC.

L. G. TILLOTSON & CO.,
No. 8 DEY STREET,
NEW YORK.

Sole Agents for "Johnson's" Wire.
" " " American Compound Wire.
" " " Cauvet's Patent Screw Insulators.
" " " Sam'l C. Bishop's Insulated Wires and Cables.
" " " Brooks' Patent Paraffin Insulators.

Manufacturers of every description of

TELEGRAPH APPARATUS.

THE RAILROAD GAZETTE.

TELEGRAPHERS will take a special interest in the discussion now carried on in the

RAILROAD GAZETTE

concerning the AMERICAN SYSTEM OF TRAIN DISPATCHING. The GAZETTE gives the fullest information in all departments of Railroad, and all the Railroad news.

It is an illustrated paper of 24 quarto pages—about the size of *Harpers' Weekly*.

PRICE, - - - \$4 A YEAR.

Subscriptions will be received for three months at One Dollar.

ROBERT BROWN,
TELEGRAPH CONTRACTOR,

Office, No. 5 DEY STREET (Room 7) New York.

Residence, 499 DEAN ST., Brooklyn.

Routes selected and located, Rights of way obtained. Telegraph lines of any length constructed in the most substantial manner with British or American Iron Wire, or American Compound wire, with any desired insulation, and on the LOWEST POSSIBLE TERMS.

R. S. WHITCOMB,
CHICAGO, ILL.,
DEALER IN TELEGRAPH POLES

keeps constantly on hand and for sale a full assortment of all lengths and sizes of TELEGRAPH POLES, and is prepared at all times to fill orders and make contracts for supplying Poles on the shortest notice.

Yard and Office on FISK STREET, near TWENTY-SECOND, Chicago, Ill.

CHARLES WILLIAMS, JR.,
(ESTABLISHED 1856.)

109 Court Street, Boston,

has for sale the various kinds of Office and Magnet Wires, including Cotton Covered, Silk, Gutta Serena, Painted, Fancy, and DAYS KERITE COVERED WIRE.

AMERICAN FIRE ALARM AND POLICE TELEGRAPH.

GAMEWELL & CO., Proprietors,
104 CENTRE STREET, NEW YORK.

J. W. STOVER,
General Agent and Superintendent.

L. B. FIRMAN, Chicago, Ill.,
General Agent for the West and North West.

J. R. DOWELL, Richmond, Va.,
Special Agent for Virginia and North Carolina.

J. A. BRENNER, Augusta, Ga.,
Special Agent for Georgia and South Carolina.

L. M. MONROE, New Canaan, Conn.,
Special Agent for New England.

THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

Albany, N. Y.,
Alleghany, Pa.,
Boston, Mass.,
Bridgeport, Conn.,
Buffalo, N. Y.,
Baltimore, Md.,
Chicago, Ill.,
Cincinnati, Ohio,
Columbus, Ohio,
Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
Washington, D. C.,
Worcester, Mass.

The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM AND POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original FARMER & CHANNING PATENTS, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

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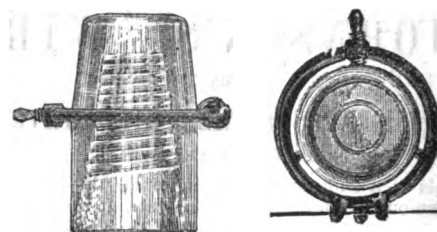
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These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

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2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal.

As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

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THE CHESTER, A 1, WIRE

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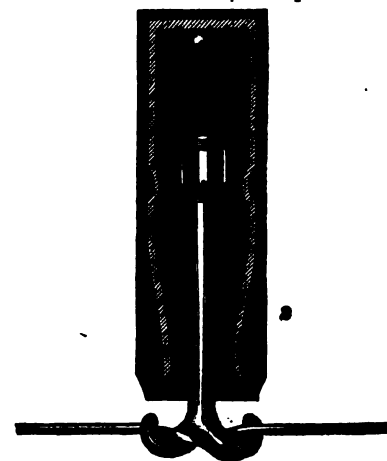
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The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 36.

New York, Saturday, April 27, 1872.

Whole No. 302

Original Articles.

The Great Secret of the Paine Electro-Motor.— An Ingenious Fraud.

Few of our readers, we fancy, have forgotten the excitement that was created in electrical circles last summer by the remarkable "invention" of Mr. H. M. Paine, who professed to have discovered nothing less than the long sought for perpetual motion, in the shape of an electro-magnetic engine which actually evolved power from nothing! Mr. Paine's claims were not only endorsed by a number of semi-scientific capitalists, who had faith enough to "put up money on it," but at least one newspaper editor enthusiastically recorded his conviction that a great and most important advance in electrical knowledge had been made, and one which negated the results of all previous experiments and experience with electricity and magnetism as a motive power, and prophesied an impending revolution in mechanics which should astonish the world, and confound the teachings of Joule, Tyndall, Faraday, Farmer, and other adherents of the doctrine of the conservation of forces. We were to see developed a power by the Paine Electro-Magnetic Engine which could drive the Great Eastern across the Atlantic at the rate of 150 miles per hour with a single cup of battery, and so on *ad nauseam*. But in one of the laudatory articles the cat was unwittingly let out of the bag. It was explained that the battery used in the Paine motor in all probability served merely as an "initial force." We were very strongly inclined to believe in this theory ourselves, and always had a sort of calm confidence that the lapse of time would vindicate its correctness.

A lively discussion was carried on for some months in the columns of the *Scientific American* between Mr. Paine and a number of hard headed unbelievers; but this finally died away, and he was left in peace to go on and complete his sixty horse power engine, which we were informed was already on the stocks.

Several months passed and we heard nothing more of the wonderful "invention," till at length a disagreeable rumor reached us that Mr. P. had left for parts unknown, and that the celebrated electro-motor had been transformed into "old junk." We thereupon concluded to despatch a trustworthy reporter to see how Mr. Paine was getting along. Our representative accordingly proceeded to the establishment in Bank street, Newark, New Jersey, where the elephant was formerly exhibited to admiring audiences. A well appearing boy, twelve or fourteen years of age, was the only person visible about the premises. The "motor" had disappeared, and nothing remained except a few scraps of old machinery, metal, &c. Our representative "interviewed" the youth with the following result:

Reporter.—Can I see Mr. Paine?
Boy.—No, sir. He isn't here now.
Reporter.—When will he probably be here?
Boy.—Don't know.
Reporter.—How long since he was here?
Boy.—Oh, as much as three months. We have been expecting him back a long time.
Reporter.—Where would a letter be likely to reach him?
Boy.—You might send it care of his brother in Boston, No. — street.
Reporter.—Could I see Mr. Paine by going to his brother's place in Boston?
Boy.—Oh no, he isn't there. I guess he is in Portland.
Reporter.—I understand the electro-motor has been sent to a junk shop to be sold.
Boy (assuming a very "child-like and bland" expression).—Oh no, indeed; only some old scraps of brass and one thing and another.
Reporter.—Would you allow me to look at the machine?
Boy.—There isn't any machine here now; it's gone.
Reporter.—What has become of it?
Boy.—It has been packed up and sent away. I guess it went to Portland.

Our reporter was not entirely satisfied with the result of this interview. To use a vulgar but expressive phrase, he smelt a large sized mice! He subsequently proceeded to make a tour of inspection among the junk shops of Newark, and finally his perseverance was re-

warded by discovering the object of his search, or at least a considerable portion of it, in a scrap heap at No. 17 Railroad avenue. This portion consisted principally of the heavy iron base or pedestal which supported the machine. A careful examination of the remains threw a flood of light on the manner in which the "old thing worked."

Two rectangular apertures extended through the base from top to bottom, so arranged as to allow of a belt being concealed therein, which passed over a concealed pulley on the main shaft of the machine inside the case. This belt also passed around a pulley on a shaft near the ceiling of the room underneath the engine. (This room was always kept locked. Mr. Paine said "it was rented by parties unknown to him." The owner of the building says Paine himself rented the room, and steam power with it!) The latter pulley was shifted in and out of gear by an electro-magnet, concealed wires being led down from the conductors, which apparently merely connected the battery with the commutator of the machine. This belt was left rather loose on the pulleys. The *modus operandi* was as follows: When the circuit was closed the pulley beneath was thrown into gear by the "initial force" of the battery acting on the electro-magnet, but the belt being quite loose, and the revolving portion of the machine being provided with a heavy pulley, acting as a balance wheel, it would start very slowly, but in a short time would attain considerable velocity and power.

Those who were fortunate enough to see the machine in operation will remember that although it weighed, including the base, perhaps 1,200 pounds, yet Mr. Paine found it necessary to bolt it to the floor with four bolts. This would, however, have a tendency to prevent impertinent investigators from moving the apparatus with a crowbar or otherwise, and thus throwing the belt out of line.

Among the other "relics" discovered by our reporter in the course of his investigation was a machine belt, with two fine copper wires sewed on the surface, near each of its edges. This, doubtless, played some important part in the internal economy of the "motor," possibly serving to convey the "initial force" to the electro-magnet of the pulley in the room below. The whole arrangement was simple, neat and effective, and reflects a great deal of credit upon its inventor, as far as his skill in mechanical legerdemain is concerned.

There has been much anxiety, especially among the subscribers to the capital stock of the Paine Electro-Motor Company, to ascertain the secret upon which the wonderful electro-motor was based, and we have no doubt but that they will be highly gratified, and grateful to us for giving them the information so long and heretofore vainly desired! They can now realize how excellent an investment of their surplus capital they have made, and what an injured innocent is Mr. H. M. Paine, formerly of Worcester, Mass., later of Newark, N. J., and now of parts unknown. The sublime but more than child-like confidence of the contributors to Mr. Paine's ample funds must excite general admiration. They were not to be fooled out of a good thing by old fogey electricians and absurd natural and scientific laws. When Mr. Paine completes his experiments both the contributors to his water gas fund and his great electro-motor fund will, no doubt, be millionaires, and Paine himself the purchaser of the entire national debt—provided the national debt has not been paid off before that time.

It is to be hoped that Paine has saved enough of the funds subscribed and paid in for the motor stock to keep him in comfort for some time, as it will not be practicable for him to devise another so ingenious a fraud, or to secure the confidence of capitalists again for at least two or three years. The great difficulty in such operations is that an entire new set of contributors must be secured for each operation. Water gas and electro-motors have probably used up the available stock for some time to come.

THE electric light has been introduced into the lighthouse at the South Foreland. This is now the third lighthouse station in England at which the electric light is established, and the French have established one at Cape Griznez.

The Proposed new Atlantic Telegraph Cable.

THE prospectus of a new Atlantic telegraph cable company, entitled the Great Western Telegraph Company, is announced in England, and is prominently noticed in the money articles of the leading London papers. The following, from the *London Standard* of the 10th, will give an idea of what progress has been made, and what is proposed to be done by the new company:

"The new Atlantic cable is at last announced. It has been expected for two or three months, and now comes forward under encouraging auspices. The directors are practical men of business; the engineers and electricians of first class standing; and the arrangement of operations seems thoroughly sound. The capital is placed at £1,350,000, in 67,500 shares of £20 each, of which £900,000, in 45,000 shares, are now offered to the public. The company is entitled the Great Western Telegraph Company (limited). The undertaking is formed to connect New York with England, and to connect the West Indies directly both with New York and England, without, in either case, the intervention of any system of land lines. It is further apparent that when the lines of this company are laid it will require but a comparatively short cable to continue telegraphic communication to Brazil by a route which will not only be short, but will at the same time have the great advantage of connecting Brazil both with England and New York by direct lines. The route adopted for these purposes is from the best possible point to be selected near Land's End to the island of Bermuda, with one line thence to a point as near New York as possible, and another to the island of St. Thomas, in the West Indies. A contract for the making and laying of the cables for the price of £1,330,000, and dated the 8th day of April, 1872, has been made between Hooper's Telegraph Works (limited) of the one part, and this company of the other part, upon the basis of a specification for a similar cable recommended by Sir Samuel Canning, C. E., and Latimer Clark, Esq., C. E., last year, and recently revised by Sir William Thomson, LL.D., F. R. S., and Fleeming Jenkin, Esq., F. R. S., C. E. As a practical guarantee for care in the manufacture and laying of the cables, the directors have stipulated that the contractors shall take, by themselves and their connections, shares to the amount of one third of the capital.

The prospectus states that a working agreement has been made between the Great Northern Telegraph Company and this company which secures to the latter the traffic from Denmark, Norway, Sweden, Russia, China and Japan, passing over the lines of the Great Northern Telegraph Company, and intended for America. It has further been arranged with the Great Northern Telegraph Company that when that company establishes its projected North Atlantic line a joint purse agreement, on an equitable basis, will be made with this company with reference to North American traffic—which arrangement will give this company the important advantage of a duplicate route between England and America. The smallness of the capital required by this company, compared with that of other Atlantic cable companies, will enable this company to establish a lower tariff, and thus not only to open telegraphic communication with America and the West Indies to a large class of the community who have hitherto been debarred from it by existing tariffs, but at the same time to increase the number of messages from those who have hitherto sent them sparingly. It is intended to reduce the charge for the transmission of ordinary messages between England and America to one half the present rate, or £1 for every ten words, and to adopt a similar system for messages to the West Indies. In addition to the important share of the New York and North American traffic which will by these means and otherwise accrue to this company, a large revenue is expected from the West Indian islands and places which are already, or will shortly be in telegraphic communication with the same, a traffic which will only be fully developed when this direct line has been established. The island of Bermuda, as an important shipping station, will also yield traffic of some value. It is therefore estimated, even taking into consideration the tariff reduction referred to above, and after making a liberal allowance for working expenses and reserve fund, that a large

profit will be realized. By the adoption of a system of deferred messages, to be sent at a cheaper rate, it is expected that a further addition to the profit will be insured. The principle of coöperation will be adopted by giving a discount to shareholders holding not less than 100 shares, of ten per cent. on messages sent by them.

"The Atlantic service will now be completed, with auxiliary lines to the West Indies and Brazil. Even the latter routes will pay well of themselves, but the whole together should afford a handsome dividend to the shareholders. Already the applications for the shares are understood to be very numerous."

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

From Washington.—Postal Telegraph Matters, etc.

WASHINGTON, D. C., April 24.

TO THE EDITOR OF THE TELEGRAPHER.

MR. GARDINER H. HUBBARD made an argument on Monday, before the House Committee on Appropriations, in favor of his Postal Telegraph bill, which was favorably reported upon as amended by the Senate Committee on Post-offices and Post-roads. Mr. Hubbard said that when he appeared three years ago and advocated a reduction in rates of 50 per cent. Mr. Orton then ridiculed the double transmitter and other inventions which had been introduced for rapid telegraphing. Now he learned that they had adopted it on many of their principal circuits, and intended to make use of it hereafter instead of erecting additional wires for the increase of business. He had also proposed a half rate for night messages. The Western Union pamphlet, in reply, demonstrated its impossibility, and yet it is now in universal use throughout the country. The office expenses of the present system were far too great, and could be largely reduced by compulsory prepayment and the use of stamps. He also proved by European statistics that increase of business justified a reduction of rates. In spite of all the increase of facilities and of business the Western Union Company had made no corresponding reduction of rates.

Mr. Hubbard said that the editors of the leading papers were praying for a deliverance from the present oppressive monopoly. Within a year a notice had been issued that any paper criticising the character of the news was liable to be cut off, and that this had actually been done in the case of a paper in a neighboring city. He then referred to the precedence given to the commercial news reports on the wires. He did not say it was not right, but merely wished to show that a certain class of business is now given preference every day. The bill proposes to legalize what is now contrary to law. It is a characteristic of the present age that all business tends to concentrate in the hands of monopolies. This is especially true of the telegraph. If, therefore, we must have a monopoly, let it be managed by the people for the benefit of the people. The bill proposes to have the Post-office Department receive and deliver all telegrams, and to transmit them by contract with a company who will furnish the lines and apparatus. Mr. Hubbard said the Western Union was the only known public corporation in this country or abroad whose reports are not published. In the present amended bill the rates have been fixed at about the same as that agreed upon some time since for the signal service telegrams. A great point in favor of this plan was that it conferred no additional power upon the Executive, but on the other hand it was divided between the Post-office Department and the company, and all additional patronage was obviated.

It was understood that Mr. Orton was to reply to Mr. Hubbard on Tuesday. Mr. Prescott, however, appeared before the committee on behalf of the Western Union, and distributed copies of the remonstrance which was printed some time ago in THE TELEGRAPHER, but did not make any argument.

Mr. R. B. Lines then read a lengthy argument in favor of the Government telegraph, pure and simple, generally known as Washburn's project, and in opposition both to Mr. Hubbard and the Western Union. He asserted that he knew that the scheme of a Government telegraph, advocated in the President's message, was favored by a majority of the practical operators of the country. He predicted a coming revolution in telegraphy, in which the present systems would be superseded by an automatic and autographic telegraph, and that, in consequence, within fifty years, if the Post-office did not absorb the telegraph the telegraph would absorb the Post-office. Mr. Lines repeated a large number of the familiar arguments in favor of the scheme. He believed that a great reduction in rates was possible under the Government system. At present rates a saving of \$5,000,000 would be made by doing away with expenses of competing companies by using the Post-office buildings and employes for the telegraph service, and by abolishing half a million of free messages annually. Mr. Lines asserted that the

lines were in no better condition than when examined by Mr. Varley. It was not possible to work more than three wires between Washington and New York during the heaviest rains.

Owing to lack of time Mr. Lines did not fully complete his argument before the committee. In answer to questions Mr. Prescott stated that there were at the present time more miles of telegraph in the world under private than under Government control. He also gave some statistics showing the comparative increase of receipts and expenses on the Western Union lines.

Mr. Garfield, chairman of the committee, read returns showing the gradual decrease in the number of complaints in England under Government management.

It is rumored that a majority of the committee favor the Hubbard bill, but I cannot vouch for the truth of it. It is considered certain, in well informed circles, that no action in the matter will be taken by Congress at this session.

The Virginia Telegraph Company advertises for proposals for constructing lines from Alexandria through Fredericksburg, Richmond, Petersburg, Weldon and Goldsboro' to Wilmington, N. C., and also from Staunton to the White Sulphur Springs, Va. F. L. P.

Illiterate Plugs.—Action of Responsible Telegraphers Suggested.

MISSOURI, April 15.

TO THE EDITOR OF THE TELEGRAPHER.

As an evidence of the superiority of Western plugs over all others the following specimen will exemplify:

An operator on this line having received an offer of a situation from a Western Superintendent, after mature deliberation answered thusly:

"To J. J. D.—I cannot except your situation."
 ("Signed)," "—"

I think that, instead of discussing the merits of the different modes of train despatching, without the least possible show of agreeing upon any one, we might do some good by joining together, and, by prescribing a test, rid ourselves of these kind of men, who are dragging the profession down inch by inch. This is my first attempt at corresponding with any newspaper, although I have been in the business for nine years; and as much has been said, and nothing done, I propose that the managers of the leading offices issue a call for a convention of operators, to be held in the city of Cincinnati on the 17th day of July, 1872; number and manner of electing delegates to be designated by them. Who next? AGRICOLA.

How Evils Must be Remedied.—The Anti-Students' Correspondents Criticised.

TO THE EDITOR OF THE TELEGRAPHER.

How do you do—and how are all the boys—and whose plan of organization has been adopted? I don't see any light on this subject, either in the sky or in your paper. Have they all gone to sleep again? Who's the best man on the anti-student question? Let's look at that student question. How very thin it is! It's as transparent as the tail of a comet and quite as useful. What do we propose to stand on—merit or what? If ignoramuses and novices can supplant talent and experience, why, for pity's sake, let talent and experience be supplanted. In other words, if the telegraph managers cannot be made to see, appreciate and recognize the difference in the value of employes, after a fair, earnest and dignified endeavor upon our part to make them see it, then, and not till then will it be time to organize, equip and operate a telegraph of our own or quit the business. If there cannot be made a far greater difference in pay—something like the actual difference in the range of ability and acquirements among employes—and if the highest grade of talent cannot reach a much higher compensation than now and heretofore, it were far better for us that the art of the telegraph had never come into practical use.

Now, gentlemen, all such effusions as have appeared upon the student question are a great damage to the profession, for they simply expose us to be estimated as so weak—yes cowardly—as to stand in fear of inferior help. It is deducible from this that we admit it possible for novices and inefficient to fill our places. It is evident to us that they can do no such thing. It is plain to us that many men are working for \$90 a month who are worth and earn in a year five times as much for the company as other men who get \$60 to \$75. We know of very young men who, simply because they can take press report well, and send and receive business in good style, receive as high salaries as others who can handle equally well any branch of the business. One of the former would not be able to set up a local or find a break in the main wire were it under the table at which he works, while the latter can open offices, run wires, test wires, build a line, all in good shape; and daily—yes, dozens of times a day—does the former look to the latter for help and information—which, could he not get, the business would hourly become blocked and fall into greater contempt than ever.

What work lies before us is the removal of this evil state of affairs. If we cannot remove it by and with the consent and coöperation of the company, then we cannot remove it at all.

Dignified and persistent effort should be made to bring about a thorough investigation of this matter, then a full and thorough test in practice of the theory that the revenues of the company and the efficiency of the business would be greatly advanced by grading employes according to their practical service value, and remunerating them accordingly—the highest grades much higher and the lowest and medium more in proportion to their value.

All who enter into the spirit of this matter might influence others to see it as they do.

I cannot believe that the articles which have appeared on this student subject were written by our best representative men. They are not cool and logical; they are petulant and boyish. We may once for all give it up as an impossibility to force a point which is not backed up by reason and common sense. One of the best proofs of the hopelessness of our cause is the fact that only a few hundreds out of many thousands of telegraph employes take the paper, and the only paper which steadily works for the good of the entire profession. Did every operator subscribe for it, THE TELEGRAPHER would have an influence second only to—no, second to nothing.

Congress and the Telegraph.

WASHINGTON, D. C., April 24.

TO THE EDITOR OF THE TELEGRAPHER.

THERE is again some stir in regard to telegraph matters in Congress, but the remainder of the session is too short, and the business is too much behindhand to admit of anything like definite action before the adjournment is reached. There is much and very general anxiety among the members for an adjournment before the meeting of the Republican National Convention at Philadelphia in June, and it seems probable now that the present session will terminate by the 29th of May. President making occupies the attention of members of Congress now more than anything else, and will continue to do so until after the nominations and election have taken place.

I notice, in the accounts of the Morse Memorial celebration here on Thursday of last week, that Speaker Blaine stated that the register on which messages were being received at the Speaker's desk was working direct to London. It is but just to him to say that the absurd statement was made by him on the information of the parties who were really working it direct to New York. Mr. Blaine was very angry the next day when he found out how he had been imposed upon, and very justly too.

The Western Union Company had arranged to receive messages from different places, and supposed, of course, that they would be short, under the circumstances—but, in fact, every city, town, and even local associations got up meetings, and taking advantage of the opportunity for telegraphically ventilating themselves, sent long strings of resolutions, etc. At least a hundred and fifty of these were received at the Western Union main office, some of them containing over 500 words. Of course it was impossible to read them at the meeting.

In the Senate, on Thursday of last week, Mr. Ramsay, from the Committee on Post-offices and Post-roads, reported the Hubbard Postal Telegraph bill, with a large number of amendments relating to the details. It is doubtful whether much consideration will be given to it in the Senate, but it is very likely to pass that body, as the Senate has already passed it substantially in the same shape once or twice before.

In the House, yesterday, Mr. Packard, of Indiana, introduced a bill to establish telegraphic communication between the United States and Asia. I have not had time to examine the details of the bill yet, but as soon as it is printed will send you a copy.

The House Committee on Appropriations have had the Postal Telegraph matter under consideration of late, and may possibly report before the session closes. They have given the Postmaster General's scheme for a Government telegraph, pure and simple, the go-by, and are working away at Hubbard's scheme for a hybrid arrangement.

The Hubbard party have taken courage from the disagreement between the Western Union Company and the Government in regard to the tariff on the weather reports, and have used it with some effect to galvanize the Government telegraph project. This will account for the sudden interest of the Appropriation Committee on the subject. It will not probably amount to much, however, as the Government has the Western Union Company at a disadvantage, and it will eventually be obliged to accede to any terms that the Postmaster General may see fit to impose upon it. After that matter is arranged postal telegraphy will probably slumber again. CAPITOL.

Telegraph Matters in Chicago.—Manifestations of Respect for the late Prof. Morse.

CHICAGO, April 11.

TO THE EDITOR OF THE TELEGRAPHER.

TELEGRAPH matters are rather dull here at present, but we are expecting business to 'liven up' when we get settled weather. A great many changes will occur about the first of May. The old timers who go South with the birds in the Fall are returning with them this Spring and taking to their old haunts, some building new nests, choosing new mates, etc. Vacancies in the

prominent offices will be mostly filled by the first of June at the outside.

The burnt district is being rapidly built up in a much more substantial manner than before the purification.

The veneration for the deceased Father of the Telegraph, manifested on the day of his funeral, was universal. There seemed to be no understanding among the profession here as to any concert of action, as there were no meetings held previously, and at first we were inclined to think there would be no outward manifestations, but were pleasantly disappointed, for on the morning of the fifth every operator we met wore some badge of mourning—a rosette of crape or sable tie on the left arm. We were fortunate enough to be admitted into the operating rooms of the different commercial companies, as they, as well as most of the railroad companies, had their offices elaborately draped. In the Western Union office we noticed, over the day report table, a life-like picture of the dear old professor, draped in mourning. The number slips on many tables were in mourning; one in particular was shown us from the Springfield, Ill., table, which was mounted with a bust of Mr. Morse (the work of the operator), in which every line of the face was brought out as natural as life. All the instruments we noticed were draped, and a feeling of sadness seemed to pervade every office we entered. The offices on Wabash avenue were draped in a very artistic manner. The Pacific and Atlantic being in a basement, had not the same room as either the Western Union or the Atlantic and Pacific and Great Western, but they made good use of what they had. It was very seldom any one not conversant with the cause of the mourning passed either of these offices without stopping to inquire the cause; in many cases ladies and gentlemen, who had not received the required information, alighted from their carriages and entered the offices to ascertain—the attention attracted being universal. The Metropolitan City Telegraph offices, although having but one operator in most of them, were not behind the larger offices in their expressions of sorrow. The profession would have been better suited if there had been some concert of action by those connected with the business in this city, but the operators waited for one another, thinking some officer of one of the different companies would issue a call for a meeting until it was too late, so that each one was obliged to act for himself. Probably this was better in the end, as none were obliged to make any manifestation except as their own feelings prompted them, while if there had been an official order, or any action suggested by those in authority, there might have been some who would have made the mere outward manifestations from mercenary motives, while inwardly they did not feel sorrow for the loss of one who has so greatly benefited mankind. We are happy to say very few are to be found in the Garden City who do not acknowledge Prof. Morse as the rightful inventor of the electric telegraph. We are informed that an official "REQUEST" to observe the day, and wear some kind of badge on the fifth, was sent to the leading offices of the Western Union Company, signed by its President and Superintendents, but could not ascertain if similar action was had by any of the other companies or not.

OCCASIONAL.

Personals.

Mr. W. T. BACKUS has been appointed circuit manager of the Western Union Company at Oil City, Penn.

Miss LIZZIE A. TURNER has resigned the situation of assistant operator of the Philadelphia, Reading and Pottsville office, at Shenandoah, Pa., and accepted a position in the Western Union office at Great Barrington, Mass., vice Miss L. C. FREEMAN, deceased. The position in the Shenandoah, Pa., P. R. and P. office is now vacant.

Mr. F. A. STUMM, manager of the Oil City, Pa., Western Union office, having incurred the displeasure of the brokers and middlemen in the oil business, by communications in a local paper adverse to their interests, has been, at their request, removed from the management of the office, and discharged from the employ of the Western Union Company.

Mr. GEORGE EDWARD FOSTER has been appointed manager of the Oil City, Pa., Western Union office, vice F. A. STUMM, removed.

Mr. C. M. MILLER has been transferred from Corning, Holt County, to Bigelow, Holt County, Mo., as agent and operator of the Kansas City, St. Jo. and Council Bluffs R. R. Co.

The Telegraph and the Railroads.

THE Western Union Telegraph Company, during 1871, purchased over 14,000 miles of telegraph wire for the necessities of that year. Already 8,000 miles have been purchased for 1872, and the prospects are that over 15,000 miles will be needed to meet the demands of the current year. This fact finds its explanation simply in that of railway extension. Railways and telegraphs go, *pari passu*, hand in hand. Without the railways there would be little need of the telegraph; without the telegraph there could be no railways on any such scale of magnitude and operation as our country now exhibits.—*Chicago Railway Review*.

The Goodyear hard rubber patent expires May 6, 1872.

The Telegraph.

By Cable.

TELEGRAPH CONCESSION ANNULLED.

MADRID, April 18.—A decree has been issued annulling the concession for a telegraph cable to America by way of the Azores.

ANOTHER NEW ATLANTIC TELEGRAPH CABLE COMPANY.

LONDON, April 20.—The prospectus of the "American Atlantic Telegraph Company" is issued. The company proposes to lay a cable from Milford Haven, in Wales, to Rye Beach, N. H. The rate for messages will be fixed at 1s. 5d. per word, with a charge in gross for address of three shillings. This rate is about one third of the tariff of the present monopoly.

TIME FOR CONCESSION FOR THE MEXICO AND CUBA TELEGRAPH CABLE EXTENDED.

CITY OF MEXICO, April 15, via HAVANA, April 23.—The time prescribed by the concession for the laying of the telegraph cable between Mexico and Cuba has been extended one year.

The Montevideo and Brazilian Telegraph.

A COMPANY has been formed to construct a system of land lines and submarine cables to complete a link in the communications of the River Plate Telegraph Company. The exclusive concession has been obtained for connecting Montevideo, which is the present terminus of the system, with the Brazilian frontier, and giving communication with the principal towns of the Republic of Uruguay. The existing line gives communication from Montevideo to Buenos Ayres, and by the new Transandine route with Valparaiso and Santiago, in Chili; and all these important towns will, by the proposed system, be brought into closer correspondence with Europe and the United States by five days. The estimated cost of the 400 miles of land line and 230 miles of cable is £105,750, and a contract has been made for the construction of the cable by Mr. W. T. Henley, of North Woolwich.

Telegraphing Nearly a Hundred Miles Without a Conductor.

DURING the progress of the survey of Lake Superior, made by the officers of the U. S. Government, telegraphic messages were frequently sent in the Morse alphabet a distance of over ninety miles, by means of small 10x12 looking-glasses, employed to reflect the sun's rays, and read with a telescope from the receiving station. A movable screen was employed to cut off the light at unequal intervals, corresponding to the spaces of the telegraphic characters.

Foreign Telegraphic Notes.

A CONVENTION has been signed between the representatives of the Telegraphic Construction and Maintenance Company and the Falmouth, Gibraltar and Malta Company, on the one part, and the Portuguese Government on the other, for the establishment of a cable between Lisbon and Brazil, touching at Madeira and Cape de Verde.

The *Railway News* of April 6th says, "We understand that the contract for the new cable across the Atlantic and direct to New York was signed last Tuesday, and it will be manufactured and laid from the Great Eastern by the Telegraph Construction and Maintenance Company, so that the public is to be congratulated upon the prospect of a fourth electric cable between England and America. It seems probable that the 700 miles between Halifax and New York will be laid first by another of the Telegraph Construction and Maintenance Company's fleet, and that the Great Eastern will subsequently lay the long line between England and America. The whole expedition will be once more under Captain Halpin.

South Australian advices to February 17th state that the overland telegraph was again subject to vicissitudes, floods having damaged and swept away both poles and wires. The latest intelligence, however, relative to it, is of a more satisfactory character than has been the case for some time past. The several parties in the north are pushing on, and the Adelaide Government hopes, by means of horse expresses in that portion over which the wires are not yet stretched, to complete the communication with Europe within the next few weeks.

The number of messages transmitted from postal telegraph stations in the United Kingdom during the week ended March 30, 1872, was 240,689—an increase over the corresponding week of 1871 of 28,185.

TELEGRAPHIC.—First Agricultural (quite a year after our branch had been opened)—"What be they post-es vur, Mas'r Sam'l?"

Second Ditto (was of the village)—"Why, to carry the telegraph woirs, George!"

First Ditto.—"What be the woirs vur, then?"

Second Ditto.—"What be the woirs vur? Why, to hold up the post-es, sarr'n'y, George!"—*Punch*.

Miscellaneous.

IMPROVED CAR BRAKES.—It may be remembered that about a year and a half ago we gave some account of Olmstead's new electrical car brake, which was experimented with on the Providence and Worcester road, and operated by the opening and closing of an electrical circuit, and by which operation the power of all the brakes on a train could be applied at the same moment, thereby bringing the train to a stop much sooner than could be done by the ordinary number of brakemen on a train. Like many other things when in their infancy, there were some objections to its practical working—one of the principal being that when the circuit was closed the whole power was at once exerted, which produced a disagreeable shock to the train, although it was effectual in stopping it. By an improvement which the inventor has applied to the principle this objection is obviated, as by the very simple manipulation of a circuit switch the power can be so gradually applied that the passenger is unaware of the moment the train begins to diminish its speed, and as all the cars receive the friction at the same moment, there is an absence of that unpleasant bumping of one car against another. This improvement has been applied to one of the Worcester through trains, and during the few days it has been operated gives great satisfaction. It is to be so arranged that the engineer can easily control his train by its use without the necessity of taking his eye from the track or moving from his position, and should he see cause for bringing his train to a stand still as quickly as possible, it will not be necessary for him to alarm the passengers with any signal. It will also be so connected that should the train become parted by any accident, the act of separation will apply the brakes to both portions of the train. Any employé on any part of the train can also operate the brakes at any moment, if necessary. We trust this improvement will prove as valuable as it seems.

New Patents.

For the week ending April 9, 1872, and each bearing that date.

No. 125,584.—PRINTING TELEGRAPH. George Little, Rutherford Park, N. J.

1. The combination of clamping wings, an electro-magnet and a type wheel, substantially as set forth.
2. The linking disk applied above the type-wheel and between that and a disk or roller in the ink trough, as set forth.
3. An electro-magnet for moving the type wheel, in combination with a permanent magnet and electro-magnet for effecting the printing by reversing the electrical current, as and for the purposes specified.
4. The lever *m*, roller *s*, and paper-guide *i*, in combination with the type wheel *a* and electro-magnet *c'*, substantially as and for the purposes set forth.
5. The arrangement of the keys *w'* and circuit breakers connected to the respective magnets *q* and *c'*, in the manner and for the purposes set forth.
6. The means for moving the paper along simultaneously with the printing operation, by combining with the type wheel the serrated edges or projecting points, substantially as set forth.

No. 125,585.—TELEGRAPH RECKONING APPARATUS. George Little, Rutherford Park, N. J.

A telegraphic communication received upon chemical paper in lines running back and forth, or zigzag, and connected at alternate ends, substantially as set forth.

No. 125,586.—ELECTRICAL INDICATOR. George Little, Rutherford Park, N. J.

1. An indicating needle in combination with an adjustable helix, that can be moved nearer to or further from the needle, substantially as set forth.
2. A needle suspended in liquid within a glass tube, in combination with the helix *A* and slides *d*, upon which the helix is movable, as and for the purposes set forth.
3. The base *i*, made with the central projecting bearing *m* and adjusting screws *a*, in combination with the movable helix *A*, slides *d*, and indicating needle *c*, substantially as set forth.
4. A needle suspended by a thread in liquid within a glass tube and contiguous to a helix, for the purposes set forth.
5. The glass tube, made adjustable vertically and secured by the clamps *t*, and containing a suspended indicating needle in combination with a helix, substantially as set forth.

For the week ending April 16, 1872, and each bearing that date.

No. 125,593.—ELECTRICAL SAFE PROTECTOR. Calvin C. Rowell and William Duncan, Lebanon, N. H.

The inclosure for a safe composed of sectional plates, provided with air spaces and connected together by tubes, so as to give free air circulation, and combined with an electric circuit and an alarm apparatus, all constructed and operated substantially in the manner and for the purposes described and specified.

No. 125,716.—METALLIC TELEGRAPH POLE. Francis Boyd, Newburg, N. Y.

1. A tubular cast metal telegraph pole, having the collar *H* and shoulders *I*, for supporting the arms, formed in the manner described.
2. The said cast metal pole provided with ears, *D*, and stepped in and braced to a metal bed-piece, *B*, with arms, *C*, by adjusting braces, *E*, substantially in the manner described.
3. The lightning rod *M*, insulating tube *N*, cap *P*, and extension *O*, all combined and arranged with the pole, substantially as specified.

No. 125,771.—TELEGRAPH POLE. Alfred Homer Trego, Philadelphia, Pa.

1. The combination, with arms *F*, fastened to box *D* by straps *a*, of the guys passing therethrough and under the pole, as and for the purpose set forth.
2. The combination, with the tubular poles and the bracing guys, of the straining collars *G* and *I*, substantially as specified.
3. The combination with the pole of a box or case to be employed in securing the pole permanently in the ground, substantially as specified.

No. 125,806.—TELEGRAPH SOUNDER. Miles W. Goodyear, Chicago, Ill.

1. The combination of the single helix *C*, core *F*, bars or limbs *E*, and armature *G*, arranged and operating substantially as specified and shown.
2. The construction and arrangement of the helix *C*, core *F*, bars or limbs *E*, armature *G*, springs *g*, *J*, and frames *D*, *D'*, substantially as set forth.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.

FRANK L. POPE, Associate Editor.

SATURDAY, APRIL 27, 1872.

Removal of the Office of The Telegrapher.

WE have decided to follow the New York custom this year and change the publication and editorial office of THE TELEGRAPHER. On and after Wednesday next, May 1st, the office of the paper will be at No. 194 Fulton street, near Church street. In making this change we come down in the world—from the fourth to the second floor. Our visitors hereafter will have only one flight of stairs to climb, instead of three, as heretofore, and we hope to see our old friends, and as many new ones as can make it convenient to call at our new office, where they will always be heartily welcomed.

The Disadvantages under which Telegraphers Labor.

THE communications which we are constantly receiving and publishing from telegraphic operators indicate very forcibly the disadvantages under which the members of the fraternity labor, and for which there should be devised some adequate remedy. In consequence of the lack of concerted and united action on the part of telegraphers they are at great disadvantage. Such concert and union of action have heretofore been attempted, but, except in certain isolated and unimportant cases, have proved abortive. This is not creditable to the fraternity, and should be obviated in some way.

As the organ of the practical operators in this country, THE TELEGRAPHER has their true interests as its objective point, and has sought to advance those interests in every proper manner. It has heartily cooperated in every effort which has been made to advance those interests, and will most certainly continue to do so while it continues under its present management. At the same time it is proper to observe that it has not and does not receive that support and encouragement from the fraternity, as a whole, to which it is entitled. It has been maintained at times only by considerable personal sacrifices on the part of its publisher and editor, which he should not be called upon to make. His individual interests could be much better served by abandoning the telegraphic fraternity to its fate and transferring his allegiance to other quarters.

One of the principal disadvantages under which the telegraphic fraternity now labors is the lack of any recognized standard of ability and acquirements by which the grade, compensation and position of its members may be determined and assigned. There is not that certainty of recognition and promotion which is calculated to excite the ambition and stimulate the exertion of its members to advance and perfect themselves in their profession, and to secure a good class of practical telegraphers. Persons of inferior talents and acquirements are rewarded with superior positions and compensation, while others, better entitled to them but more modest in urging their claims, or with less influence with the higher officials, are obliged to content themselves with inferior positions and compensation or abandon the business.

This is a patent evil, and one which the best interests of telegraphic employers and employes, and of the public, require should be remedied. We have heretofore pointed out the policy in this respect which should be followed by the parties in interest, but thus far we see no indication of improvement.

Another disadvantage under which properly qualified telegraphers labor is the constant influx into the ranks of persons disqualified, by lack of ordinary education and ability, to discharge telegraphic duties. The mere manipulation of a telegraph key and learning to read telegraph characters are so comparatively

easy of attainment that hundreds are constantly taking telegraphic positions who are not calculated to prove of advantage to the fraternity or to those who employ them. This is a crying evil, and one which is daily assuming greater proportions. These so-called telegraph operators are ready to assume situations, often of great responsibility and importance, at so low a rate of compensation as to discourage and drive out of the business operators who have spent years in acquiring proficiency, and who find in other employments the inducements and rewards which are lacking in telegraphy. This causes a constant depletion of the ranks, and a majority of those who thus abandon the profession are just those who should be retained in the service.

All first class positions should have first class operators to fill them, and the line of promotion should be certain and well defined. If this were the case hundreds who have already abandoned telegraphy as unprofitable would have remained in the service, to their own advantage and that of the telegraph companies and the public. Cheap labor in telegraphy is in the end the dearest and most wasteful. The delays which are constantly taking place on telegraph circuits from the incompetence of operators, tend to greatly reduce the amount of business which can be done on a wire, and thus enhance the percentage of cost. Besides this, the annual loss to telegraph lines from "bulls," and blunders of every conceivable description, if it could be summed up, would prove a powerful argument against the employment of operators whose principal recommendation is that they are willing to accept a low rate of compensation.

We desire that the telegraphic fraternity shall be respectable and respected. Telegraphy is one of the most important, and most intimately connected with every business and social interest of the community, of the professions, and should secure and retain in its service a high order of talent and efficiency. To do this cooperation between telegraph employers and employes is indispensable. To secure this cooperation should be the aim of any telegraphic association that may be established. Mutual confidence and respect between telegraph managers and employes should be created and maintained. Just and equitable gradations of rank, compensation, acquirement and ability, should be established by mutual agreement and concert of action. There should be no such jealousy and distrust as is at present exhibited between telegraphic employers and employes, and which it is inevitable should produce just the condition of things we all regret.

On their part, telegraph employers, instead of opposing and seeking to prevent associations of telegraphic employes, should counsel and cooperate with and aid them; while the employes, instead of threatening strikes and violent measures, should calmly and temperately consider the points of difference between themselves and their employers, and all parties seek a peaceful and satisfactory solution of the problems which now vex and antagonize them.

The exhibition of such a spirit on both sides could not fail to prove highly advantageous to all parties, and result speedily in a vast improvement in the present unfortunate situation. We advocate association of telegraphers in no spirit of hostility to telegraph managers and employers, but for the mutual benefit and advantage of all concerned, and of the public, who have more at stake in this matter than they may perhaps realize.

So-called Telegraph Colleges and Institutes.

WE continue to receive copies of advertisements and prospectuses of so-called telegraph colleges and institutes in different parts of the country, which would seem to indicate that the business of turning out plugs is pretty active this season. These are usually accompanied with requests that we should show up the proprietors, etc., and very frequently these requests wind up with the exhortation by no means to let the names of the writers be known, "as this is private and confidential," etc.

What the writers have to fear from the proprietors of these plug factories, that they are so anxious not to be known in their exposition, we do not know, but we do not make a practice of publishing the names and addresses of our correspondents.

We have written and published so much during the

last three years in regard to these concerns that there is little left to be said, and we can only reiterate our recommendation that they shall be let severely alone. There is but little difference in them, and their promises are unfounded and delusive.

We regret to see a disposition on the part of certain superintendents and managers of telegraph lines to cooperate with and aid them in finding temporary employment for their victims. It is but fair to presume that any superintendent or manager of a telegraph line who regularly supplies situations for the graduates of these institutions does so for a consideration, and receives a certain sum per head for each student who is thus temporarily provided for, and the college proprietors enabled to collect the extra compensation contingent upon such appointment. We will not mention any names at present, but we have several on file, and under investigation, which we shall publish, without favor or partiality, as soon as we obtain sufficient evidence in regard to their actual arrangements in this matter with the managers of the plug factories.

The Atlantic Cable Tariff.

ON and after May 1st the tariff on despatches by the Atlantic telegraph cables from New York will be one dollar, gold, per word. Despatches of any desired length may be transmitted at this rate, even if only a single word. This will be an economical arrangement for parties who desire to send very short messages, and to this extent is a reduction upon present rates, as heretofore the minimum number of words for which payment has been required was ten, and the charge two pounds.

We stated, some time since, that the directors of the cable companies had this modification of the tariff under consideration and that it would probably be made.

An Excellent Appointment.

MR. S. ROBERTSON, the former General Supt. of the Northwestern Telegraph Company, having been elected Vice-President of the company, Mr. CHARLES H. HASKINS, late Supt. of the Pacific and Atlantic Telegraph Company, has been elected General Supt. of that company. This is an excellent appointment, and one which will prove advantageous to the company.

MR. HASKINS is a man of progressive ideas, who believes that the world moves, and that electrical science and the telegraphic art have not reached their ultimate limits some years ago. He believes in and knows how to use galvanometers, and, if allowed to do so, will bring the lines and offices of the Northwestern Company to a condition of efficiency which has long been very much needed.

Removal of F. L. Pope & Co.

THE office of Messrs. F. L. POPE & Co. will, on and after the first May, be at No. 194 Fulton street, near Church street. The present quarters of the firm have proved too restricted for its rapidly increasing business. At the new location ample room has been secured for their accommodation. The entire second floor of the building has been leased and will be occupied by them, with the exception of that appropriated for the editorial and publishing office of THE TELEGRAPHER.

Insulation Tests of the Pennsylvania Railroad Line.

DURING the rain of March 26th the following tests for insulation were made upon the wires of the Pennsylvania Railroad Company by Mr. McCormick, of Altoona. No. 3 wire, insulated with glass and pin, gave:

Altoona to Harrisburg.....132 miles.....	SIEMENS UNIT.
Harrisburg to Philadelphia.....108 ".....	1,145,960 per mile.
Altoona to Pittsburg.....117 ".....	868,964 "
	868,960 "

No. 2 wire, insulated with Brooks' insulator, gave:

Altoona to Pittsburg...117 miles...More than 7,000,000 per mile.	SIEMENS UNIT.
--	---------------

The insulation resistance of the latter for the 117 miles was so high as to be beyond the range of direct measurement with a Siemens galvanometer (59,000 ohms). Mr. McCormick states that although there are 20 relays, of 10 miles resistance each, in the circuit of No. 2 wire, not the least difficulty is experienced in working it during the heaviest rains.

AN inquisitive Indian placed an obstruction on a railway track in order to "see how high a locomotive would jump when going at full speed."

16,000 MILES
OF
"JOHNSON'S" WIRE
USED BY THE
TELEGRAPHS OF THE UNITED STATES
DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
MANCHESTER, ENGLAND.

Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

TELEGRAPH LINES

OF ANY LENGTH FULLY EQUIPPED WITH

WIRE, INSULATORS, BATTERIES,
INSTRUMENTS, ETC.

L. G. TILLOTSON & CO.,
No. 8 DEY STREET,
NEW YORK.

Sole Agents for "Johnson's" Wire.

" " " American Compound Wire.

" " " Cauvet's Patent Screw Insulators.

" " " Sam'l C. Bishop's Insulated Wires and Cables.

" " " Brooks' Patent Paraffin Insulators.

Manufacturers of every description of

TELEGRAPH APPARATUS.

THE RAILROAD GAZETTE.

TELEGRAPHERS will take a special interest in the discussion now carried on in the

RAILROAD GAZETTE

concerning the AMERICAN SYSTEM OF TRAIN DESPATCHING. The GAZETTE gives the fullest information in all departments of Railroading, and all the Railroad news.

It is an illustrated paper of 24 quarto pages—about the size of Harpers' Weekly.

PRICE, - - - \$4 A YEAR.

Subscriptions will be received for three months at One Dollar.

ROBERT BROWN,
TELEGRAPH CONTRACTOR.

Office, No. 5 DEY STREET (Room 7) New York.

Residence, 493 DEAN ST., Brooklyn.

Routes selected and located. Rights of way obtained. Telegraph lines of any length constructed in the most substantial manner with British or American Iron Wire, or American Compound wire, with any desired insulation, and on the LOWEST POSSIBLE TERMS.

R. S. WHITCOMB,
CHICAGO, ILL.,
DEALER IN TELEGRAPH POLES

keeps constantly on hand and for sale a full assortment of all lengths and sizes of TELEGRAPH POLES, and is prepared at all times to fill orders and make contracts for supplying Poles on the shortest notice.

Yard and Office on FISK STREET, near TWENTY-SECOND, Chicago, Ill.

CHARLES WILLIAMS, JR.,
(ESTABLISHED 1856.)

109 Court Street, Boston,

has for sale the various kinds of Office and Magnet Wires, including Cotton Covered, Silk, Gutta Serena, Painted, Fancy, and DAY'S KERITE COVERED WIRE.

AMERICAN FIRE ALARM AND
POLICE TELEGRAPH.

GAMEWELL & CO., Proprietors,

104 CENTRE STREET, NEW YORK.

J. W. STOVER,

General Agent and Superintendent.

L. B. FIRMAN, Chicago, Ill.,

General Agent for the West and North West.

J. R. DOWELL, Richmond, Va.,

Special Agent for Virginia and North Carolina.

J. A. BRENNER, Augusta, Ga.,

Special Agent for Georgia and South Carolina.

L. M. MONROE, New Canaan, Conn.,

Special Agent for New England.

THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

Albany, N. Y.,
Allegheny, Pa.,
Boston, Mass.,
Bridgeport, Conn.,
Buffalo, N. Y.,
Baltimore, Md.,
Chicago, Ill.,
Cincinnati, Ohio,
Columbus, Ohio,
Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
Washington, D. C.,
Worcester, Mass.

The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM
AND
POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original FARMER & CHANNING PATENTS, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION OF CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

CHARLES T. CHESTER,
104 Centre Street,
NEW YORK,
TELEGRAPH ENGINEER,
AND MANUFACTURER OF

**INSTRUMENTS,
BATTERIES,
AND EVERY DESCRIPTION OF
TELEGRAPH SUPPLIES.**

BUNNELL'S PATENT REPEATER.

These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

JONES' LOCK SWITCH-BOARD,

a most compact and reliable Switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

EXCLUSIVE AGENTS OF

A. G. DAY'S

KERITE,

OR

COMPOUND RUBBER COVERED WIRE.

SUBTERRANEAN & AERIAL WIRES,

OF THE

HIGHEST INSULATION.

We are now prepared to furnish, after an experience of three years, an insulated Wire, which can be buried in the earth or exposed to rain and sun, or to the vapor of acids, without injury. Professor HILLMAN, who has exposed it to the most destructive agencies, finds that it remains uninjured in an atmosphere of ozone, which would destroy gutta-percha in a few hours. It exceeds glass or any other known substance as a non-conductor.

We have made special arrangements to furnish this article for office purposes at a reduced rate.

ALSO, TO FURNISH

IRON CLAD CABLES,

of the usual size, with KERITE COVER, believing that it will exceed, in insulation for submarine purposes, ANYTHING HITHERTO MANUFACTURED.

We shall be happy to furnish estimates for any amount and size of cable, which will be found to compete with any other construction, both in quality and price.

We manufacture the Genuine ELECTROPOION BATTERY, with Patent Platina Connection, introduced by us eight years since; also, THE ALPHABETICAL OR DIAL TELEGRAPH, now extensively used in this and other cities for private lines, being easily and quickly learned by any one.

We offer for sale, among other novelties, a SOUNDER that will work practically with a single DANIELL cell, a BATTERY that does not require to be taken down but once a year, and the very best MAIN LINE SOUNDERS made.

Our CATALOGUE, embracing a large amount of new matter and description, is now ready for distribution.

AMERICAN COMPOUND TELEGRAPH LINE WIRE COPPER FOR CONDUCTIVITY. STEEL FOR STRENGTH.

The superiority of the COMPOUND TELEGRAPH WIRE compared with iron, consists in its LIGHTNESS, reducing by over fifty per cent. the number of poles and insulators required;

Relative TENSILE STRENGTH, homogeneity and elasticity—decreasing the liability to breakage from cold weather, sleet, etc.;

CONDUCTIVITY—insuring great improvement in the working of lines in any condition of the weather;

And in its DURABILITY, which greatly exceeds that of the best galvanized iron wire;

Altogether resulting in a very great reduction in the cost of maintaining and working telegraph lines, while, at the same time, insuring

EFFICIENCY AND RELIABILITY.

Address—

American Compound Telegraph Wire Co.,

ALANSON OARY, Treasurer,

No. 234 West 98th St.,

New York.

Agents in New York,

L. G. TILLOTSON & CO.,

8 DEY STREET.

MODERN PRACTICE OF THE ELECTRIC TELEGRAPH.

A HAND-BOOK

FOR

ELECTRICIANS AND OPERATORS.

By FRANK L. POPE.

Fifth Edition, Revised and Enlarged by the addition of 40 pages of New Matter on

RECENT IMPROVEMENTS,

AND

FULLY ILLUSTRATED.

8vo, Cloth, \$2.00

D. VAN NOSTRAND, Publisher,

23 MURRAY STREET and 27 WARREN STREET.

40 Copies sent free by mail on receipt of price.

For sale in Canada by JAMES KEARNS,
Montreal Telegraph Office at Kingston.

WE INVITE THE ATTENTION OF RAILROAD COMPANIES, AND PROPRIETORS OF PRIVATE LINES, TO OUR

Magneto-Alphabetical DIAL TELEGRAPH INSTRUMENTS,

which are in use on the POLICE TELEGRAPH and many PRIVATE LINES in Boston and vicinity.

They require no Battery, and are always ready for use, thus voiding the expense, trouble and uncertainty attending any Instruments to which Batteries are necessary. They are easily worked, having a straight Key-board, with a key for each letter and figure; are much more rapid than any Printers, and work well on LONG or SHORT lines.

They are the BEST Instruments for RAILROAD COMPANIES or PRIVATE LINES that have been produced—as Conductors, Engineers, Station Masters and others can telegraph by them rapidly in ROMAN LETTERS.

We also manufacture PRINTING TELEGRAPH INSTRUMENTS, which are the most CORRECT and RELIABLE in use.

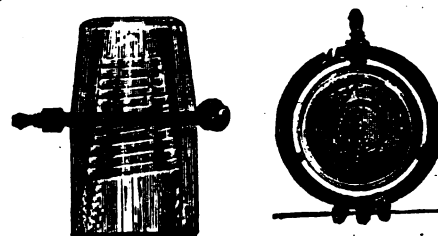
As the Type-wheel is adjusted instantly after printing each letter, no mistake can occur, except through the neglect of the operator, and they are as RAPID as any other SINGLE WIRE Printing Instruments in use.

GEORGE L. ANDERS & CO.,

80 and 40 Hanover St., Boston, Mass.

RUSSELLS' AMERICAN
STEAM PRINTING HOUSE,
28, 30, 32 CENTRE STREET,
NEW YORK,
EXECUTES ALL DESCRIPTIONS OF
BOOK, JOB AND COMMERCIAL PRINTING.
TELEGRAPH PRINTING A SPECIALTY.

CHESTER'S PATENT INSULATOR



The undersigned solicits examination of some of the reasons which have induced him to recommend to his patrons and friends the Insulator exhibited above as the best and cheapest in use.

Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulator, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal.

As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

TELEGRAPH WIRE.

The attention of

Telegraph Companies, Superintendents and Line Builders is called to a

New Article of TELEGRAPH LINE WIRE

OF UNEQUALLED QUALITY AND UNIFORM EXCELLENCE.

While great care and attention has been given to Instruments and Insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European Governments, only fit for fencing purposes. Many tons of such material now remain here, utterly unsaleable and unfit for use.

The researches of the able electricians of Europe have resulted in establishing a standard of excellence for Telegraph Wire far exceeding that with which we have heretofore been satisfied.

We extract from the minute and specific details a few of the requirements of a

STANDARD GOVERNMENT WIRE.

1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable, and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be cooled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications a breaking strain of 1,200 pounds or No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

We now offer for sale this Uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market, to which this system of tests is uniformly applied.

We shall designate it by the Trade Mark,

CHESTER, A 1,

and our customers ordering it may be sure of receiving an article always uniform, and always the very best.

The capacity or endurance of No. 9 is 21 to 23 TWISTS UPON ITSELF in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

COMPARATIVE AND COMPETITIVE TESTS

with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 29. The omission of the elongating process would increase the flexibility and the tenacity.

Although the wire has been proved manifestly superior to that commonly sold, its price will closely approximate to that of the inferior article.

CHARLES T. CHESTER,
104 Centre Street,
NEW YORK.

L. G. TILLOTSON & CO.,
8 DEY STREET, NEW YORK,
AND
BLISS, TILLOTSON & CO.,
41 Third Avenue, Chicago, Ill.,
GENERAL AGENTS FOR THE SALE OF
SUBMARINE TELEGRAPH CABLES
AND
INSULATED WIRES,
of various kinds, insulated with PURE GUTTA PERCHA,
COTTON and SILK. Manufactured by

SAMUEL C. BISHOP,
at the Manufacturers' prices. Sole Agency in the United States
for the celebrated

GALVANIZED WIRES
Manufactured by Messrs. RICHARD JOHNSON &
NEPHEW, Manchester, England.
Long Lengths; Superior Quality; Low Prices.

SOLE AGENTS FOR THE
American Compound Telegraph Wire Co.,
OF NEW YORK.

The superior quality of this Wire consists in its LIGHTNESS,
STRENGTH, CONDUCTIVITY and DURABILITY; in all of which re-
spects it greatly exceeds Galvanized Wire.

SOLE AGENTS FOR
BROOKS' IMPROVED
PATENT PARAFFINE INSULATORS.

A Stock of these Insulators always on hand.

MANUFACTURERS OF THE

Patent Screw Insulator and Brackets.

MANUFACTURERS OF

JONES' PATENT LOCK SWITCH,

For any number of Wires required.

PATENT RELAY MAGNETS,

Of any resistance required.

PONY SOUNDERS, MAIN LINE SOUNDERS,

POCKET RELAYS, in Hard Rubber Cases,

PREMIUM REGISTERS, KEYS of all Styles,

LIGHTNING ARRESTERS, PLUG SWITCHES,

BATTERY MATERIAL, for Grove, Carbon, Daniell,

Hill, Yeoman, Smee, and every other description

of Battery in use. In short, the

LARGEST AND BEST VARIETY OF

TELEGRAPH MATERIAL

Ever exhibited in this country.

We can at any time furnish and ship Equipment
for an entire Line of 300 to 400 Miles within
Twelve Hours after receipt of Order.

CHARLES WILLIAMS, JR.,
109 COURT STREET, BOSTON, MASS.
MANUFACTURER OF
TELEGRAPH INSTRUMENTS
OF ALL KINDS,
GALVANIC BATTERIES,
JONES' PATENT LOCK SWITCH,
PATENT ELECTRIC GONGS,
PRINTING TELEGRAPH INSTRUMENTS.
ALSO, ON HAND AND FOR SALE,
D. W. PUTT & CO.'S Mechanical Telegraph
Instruments,
"Pope's Modern Practice of the Electric Telegraph,"
AND A FULL ASSORTMENT OF
TELEGRAPH MATERIALS AND SUPPLIES,
AT THE LOWEST PRICES.

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HICKS & SHAWK,
MANUFACTURERS OF ALL KINDS OF
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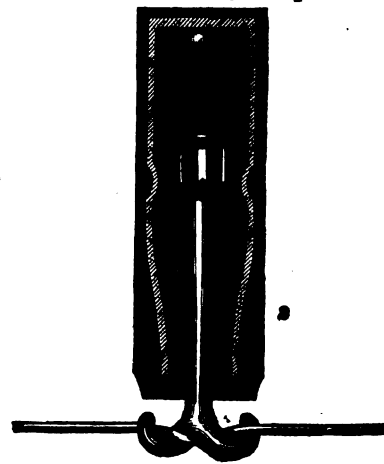
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The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 37.

New York, Saturday, May 4, 1872.

Whole No. 303

Original Articles.

Anecdotes of Western Operators.

BY LEW. OGDEN.

A FEW years since Bob M. was as well known to the fraternity in the West and South as though he were a brigadier general or a circus proprietor. His abilities were of an extraordinary altitude, but he was a devotee to the shrine of Bacchus, had a failing for a Kentucky beverage, yeclapt Bourbon, and was extremely partial to nuts of a certain kind, which gained for him the appellation of "Chestnut Bob."

Our hero, on a certain day, struck Louisville, flat broke, as usual, and upon applying for a situation was informed by the popular chief that he would give him one; "but," remarked he, "business is business, Bob, and must be attended to." The applicant coincided with these views, but in a day or two fell from grace and was discovered in a really deplorable condition by E., who not only upbraided M., but recalled to his memory the advice of the previous day. Bob leered at his accuser, and while endeavoring to hang himself on the switch-board, retorted: "Mr. E., I know (hic) b'sns is b'sns (hic); whiskey drinkin's my (hic) b'sns, and 'pon m' soul I'm tending to it." The boys laughed, but Sir Robert was not reemployed.

And now I would speak of one who was laid away to rest not later ago than last summer. "A man he was of cheerful yesterdays and confident to-morrows." I refer to Webb Bush, who was the embodiment of that character in life, a happy, easy going, good natured fellow.

Bush was acting as a receiving clerk in Cincinnati at the time of the little misunderstanding some two years back, but, as he refused to make his exit from the receiving room and his entry into the operating room, he was decapitated, and entered the employ of the P. and A. About this time that company had concluded to try the "lady" experiment, and, without previously notifying Webb, told him his services were no longer required.

"All right," responded that individual, "let's settle up," and though it was only the third day of the month he retained his full pay to the end thereof out of the receipts. The indignant manager looked aghast and exclaimed: "Mr. Bush, this is outrageous; no one ever treated me this way before." "That's easily accounted for," was the cool response; "nobody ever had the 'dead wood' on you before, as I have." He kept the money.

Speaking of D. W. Bush reminds us of the identity of sympathy between him and a well known character, whose initials are W. H. S., on the subject of that universally execrated personage, the late chief operator of Chicago office. S. entered that office on a certain occasion to speak to a friend, when the aforesaid rushed up, asked him his name, and ordered him out. Billy gave him his name, showed him his card, in the shape of a dirk, and told him he would go when he got ready, and he did.

A couple of good stories are told of a mortal of the careless kind, who was for a number of years Buffalo's crack operator. N. P. Willis, I think, is responsible for a couplet very applicable to this name-sake of a great Scottish knight:

"His leaf,
By some o'er hasty angel, was misplaced
In life's eternal volume."

It is related of the operator in question that one evening, while in his cups, he sent the doorkeeper of a theatre to get a drink, volunteering to take tickets in his stead. During the absence of that official his substitute allowed every one who desired to enter, and would let no one out. During the same "war trail" he jumped into a gentleman's buggy, the horse attached to which was standing at the door, drove it around town for a couple of hours, returned to the house, rang the bell, and thanked the gentleman for the use of his turnout. Luckily the joke was appreciated and the perpetrator forgiven.

I can recall to memory the good natured countenance of a young Canadian gentleman, who made his debut a few years since in a large Western office, where I had the honor to officiate on night report. While receiving one night as usual, with Jimmy and a friend standing

by my table, he made the remark in all good faith—"Ain't Lew a splendid operator; see him receive by back stroke." This eccentric remark caused a general laugh, but Jimmy has got over it by this time, and is as good a craftsman as any of them now. Our Canadian friends must not feel hurt at this little anecdote, and I feel certain they will not when they are informed that the writer used to be a "Kanuck" himself.

The story that is now going the rounds of the press, relative to a couple of telegraphers carrying on a conversation with their knives and forks in regard to another man's wife, who was there *vis a vis* at a San Francisco dinner table, is too old.

The following may not be the first case on record, but it is, nevertheless, more ancient than the California yarn: In the City of St. Louis, there is a Teutonic restaurant near the Seventh street depot, where, in the summer of 1867, Ed. S. and the writer were wont to attend to the wants of the inner man. One of the attaches of this eating house was an exceedingly handsome *fraulein*, who had eyes for none but the gallant Edward. At dinner one day two country dandies sat opposite us, and one of them, who evidently fancied that he had impressed the heart of the pretty waiter girl in attendance, proceeded to tick off his impressions in a boasting manner to his comrade. Ed. waited till the member from the K. & R. R. had concluded, and then telegraphed that gentleman to "git." Looking up, and seeing that Ed. had really understood him, and was very much in earnest, he at once left, doubtless acting on the suggestion of the philosophical poet who wrote—

"Who loses his love a new one can get,
But a neck that's once broken can never be set."

Stearns' Duplex Instrument.

THE Western Union Company, having acquired the exclusive control of Mr. Joseph B. Stearns' patents for transmitting in opposite directions at the same time by a single wire, familiarly known as the "double transmitter," but recently, and we think more properly, termed by its inventor the Duplex, are equipping their principal through wires in all parts of the country with the apparatus. The first trial on the Western Union lines was made some months since between New York and Albany. At the present time there are seven single circuits worked on this plan, besides one wire which is worked direct from New York to Chicago, in two sections coupled together, with a repeater at Buffalo. All the instruments work in the most admirable manner. In fact, the singular and unexpected fact has developed itself that this system actually works better in bad weather than the ordinary closed circuit arrangement. In the application of the Duplex system to long circuits—such, for instance, as that between New York and Buffalo—some peculiar though not entirely unexpected difficulties were encountered, which, however, Mr. Stearns at once succeeded in overcoming by a slight modification of the apparatus.

The principle upon which the Duplex instrument is operated was explained and illustrated in THE TELEGRAPHER about four years since, when the system was first introduced upon the Franklin lines, and may also be found in the appendix of Mr. Pope's work on the telegraph. It is in reality very simple, and consists merely in neutralizing the effect of the sender's current upon his own relay as it goes out to the line, thereby permitting the received currents to operate the relay, precisely as if it were connected direct to the ground. The *Scientific American* has an editorial explanation of it, which, we venture to say, will be as novel to Mr. Stearns as it is to most other telegraphers. It says that one set of signals is transmitted by that portion of the current which passes over the wire, and the other set of signals is transmitted by that portion of the current which returns through the earth! Our contemporary very justly terms this a "marvel of telegraphy," of which fact we should think there could be no reasonable doubt after reading the above.

Mr. Stearns has devoted much time and thought for many years past to the development of this system, and has succeeded, by means of a few apparently slight, but really vitally important modifications, in converting what was nothing more than a curious experiment into a practical success for everyday work. It is the one

touch of genius that makes the difference between a failure and a success. He is an electrician and inventor of great experience and ability, and it is satisfactory to know the results of his labors have met with the appreciation and the reward that they so justly deserve.

The Morse Memorial Meeting at Washington, D. C.

THE following are the resolutions passed at the Morse memorial meeting in the Capitol, at Washington, D. C., Tuesday evening, April 16th, and which have not previously appeared in the columns of THE TELEGRAPHER:

THE RESOLUTIONS.

Whereas, it has pleased Divine Providence to remove from the scene of his earthly labors our late illustrious citizen, Samuel Finley Breese Morse, we, members of the National Morse Memorial Association, desirous of giving expression to our sentiments of esteem and veneration for the deceased, do hereby adopt the following resolutions:

Resolved, That we share in the general sorrow pervading the country at the national loss of a great and good citizen, who has been and will continue to be esteemed one of the brightest stars in the firmament of science, and among the most useful of human benefactors, remarkable no less for his private virtues than for his public achievements—one who, in the light of the future, will be regarded by all true admirers of genius and intellect as a grand and glorious model of American character, developed under the fostering care of republican institutions.

Resolved, That we recognize in the life of the late Professor Morse an industry and perseverance in the prosecution of great purposes, a variety and richness of intellectual culture and accomplishment, a scholarly taste, a modesty of demeanor and a purity of character upon which we look back with no common pride and satisfaction; that in his death we experience, in connection with the whole civilized world, the loss of a colossal mind, whose faculties, rare in their separate capacities, and still more so in their harmonious combination, have stamped upon the page of history the impress of a renown imperishable as time itself.

Resolved, That, as living, he received the homage of all men, of whatsoever clime and nationality, and was the recipient of distinguished honors from various institutions and governments of the world, so, dead, he can be claimed by no mere locality; his fame is no longer the peculiar property of any country, but belongs to the whole earth wherever science is appreciated and genuine worth honored.

Resolved, That the electric telegraph marks an important era in civilization; that, by contributing in a thousand ways to the industrial agencies of the world, by the rapid diffusion of thought, the substitution of knowledge for ignorance (thus arresting prejudice and unjust estimate of character and conduct), by quick and friendly interchange of sentiment between nations, it may well be claimed to be the great peacemaker, pointing in its results to a period of unity and universal brotherhood, when differences will be adjusted by the arbitration of reason, and war rendered impossible; that, as the genius who, by the invention of the electromagnetic telegraph, rendered practical the scientific experiments of other eminent savants, Professor Morse is entitled to all the honors due from a grateful people to a splendid benefactor.

Resolved, That it is gratifying to reflect that Prof. Morse lived to see the marvelous spread of his great invention around the entire circuit of the habitable earth, thus witnessing a triumph of his labors rarely vouchsafed to the living toiler in the paths of practical science; that ere he closed his eyes upon the great work of his life Europe had completed nearly five hundred thousand miles of telegraphic communication, America one hundred and eighty thousand miles; India fourteen thousand miles, Australia ten thousand miles; that from the latest estimates the wires had penetrated the ocean for more than thirty thousand miles, the cables extending beneath the Atlantic and German Oceans, the Baltic, North Mediterranean, Red, Arabian and China seas, the Persian Gulf, the Bay of Biscay, the Straits of Gibraltar, and the Gulfs of Mexico and St. Lawrence.

Resolved, That a copy of these resolutions be engrossed on parchment, signed by the officers of this association and the committee on resolutions, and forwarded to the family of the late Professor Morse, expressing our sincere sense of and profound condolence in the severe bereavement they have sustained by his death.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Congress and the Telegraph.

WASHINGTON, D. C., May 1.

TO THE EDITOR OF THE TELEGRAPHER.

MR. HUBBARD and his friends consider that their chances of ultimate success have very much improved of late. They claim that a majority of the House Committee on Appropriations is in favor of their scheme, and will report favorably upon it. They do not, of course expect to secure any definite action at this session, but hope to get matters in shape so as to make essential progress at the short session; but it would appear to a disinterested observer that their hopes are father of their expectations.

In the Senate on Saturday last, which was devoted to miscellaneous speech-making, Senator Ramsey called up the Hubbard bill, recently reported from the Committee on Post-offices and Post-roads, and explained at considerable length its provisions as amended by the Committee. The first section of the bill provides for the establishment of postal telegraph stations on or near the lines of telegraph, when the gross postal receipts are \$500 per year, and at such other places as the need of business may require.

The second section of the bill fixes uniform rates for equal distances. These rates have been considerably increased over those provided for in the bill as originally presented to Congress, though they are still much below those charged by existing companies. It also provides for a system of registered messages, which will have priority of transmission on payment of double rates. This is a most important provision, and, in effect, negatives a considerable part of the reduction provided for, as all important business communications must of course pay the double rate. Mr. Ramsey claims that this provision legalizes what is now done indirectly and contrary to law, as in the case of the news of the commercial bureaus, which takes precedence over other messages.

The bill also provides for a system of telegraphic money orders between money order offices. It fixes the rates for commercial and press news at about half the present charges, and gives every association and paper a right to the news at fixed prices, instead of leaving the press at the mercy of the telegraph companies, as it now is. It authorizes every paper to have a private wire leading directly from the office of its correspondents to the office of the paper, to be operated by its own clerk.

The eleventh section of the bill fixes the bonus capital of the company at \$1,000,000, for the expenses of organization. This capital of course is to be distributed between Mr. Hubbard and the other corporators, and must ultimately be redeemed by the Government when it purchases the system, as it must, if it ever goes into operation. The bill further authorizes Congress to purchase the lines at any time at a valuation in accordance with the telegraph act of 1866.

The Foreign Relations Committee of the Senate, on Tuesday last, agreed upon an ocean cable bill, which will soon be reported, providing that any company laying telegraph cables under the oceans from American shores shall have, under the supervision of Congress, a monopoly of the business for fifteen years, and further providing that such monopoly, together with the Government business, shall be sufficient subsidy. Should this bill finally become a law, it will be a death blow to many schemes which have for several years past been seeking to obtain subsidies from Congress for cable enterprises. It places the general management and supervisory power over all American cables in the hands of the Postmaster-General. It is hardly probable that this bill will be passed at the present session, as it will meet with powerful opposition.

The desire for an early termination of the session is very great among the members of all parties, and there is a good prospect of an adjournment within a month.

CAPITOL.

The Postal Telegraph Hearing.—A Correction.

TO THE EDITOR OF THE TELEGRAPHER.

IN my condensed and hastily written report of the hearing before the House Committee on Appropriation on the Postal Telegraph matter, forwarded from Washington last week, one or two serious errors occurred which I desire to correct. In the first place, the document distributed by Mr. Prescott to the members of the committee was not, as stated in my letter, the remonstrance printed some weeks ago in THE TELEGRAPHER, but the argument of Mr. Orton, delivered before the Select Committee of the House two years ago, and which substantially covered the ground of a reply to Mr. Hubbard's argument of the previous day.

Mr. Prescott also informs me that I misapprehended his statement in regard to their being more miles of line under private than under government control at the present time, which is probably not the fact. What he did say was, that a greater amount of capital is invested, at the present time, in private than in government telegraphs throughout the world, which is undoubtedly true, as nearly all the submarine cables in operation at the present time are exclusively private and corporate undertakings.

F. L. P.

The American System of Train Despatching Safe and Reliable.

TO THE EDITOR OF THE TELEGRAPHER.

I HAVE been a train despatcher on one of the leading Western thoroughfares for more than five years past, and, in reply to your invitation, will give you my experience:

My division embraces 200 miles of the main line and a branch road 71 miles in length. Every train order given during the past five years is recorded in a book, and the whole preserved. These orders are numbered successively every day, and for the five years ending February 29th, 1872, just 75,546 orders were given in the movement of trains by telegraph. The greatest number given in a single year was 17,000, and in a single month 2,893. From 150 to 200 have been given every day for a week at a time during a rush of business. At such times we have from 12 to 15 trains per day each way, nearly half of them "wild," running entirely by telegraph orders. This becomes necessary in order to keep cars moving with the utmost despatch when the demand for them far exceeds the supply.

Within these five years only one collision has occurred, and that happened in the case of two trains running by time card, and under no orders from the despatcher. Not one single case of damage resulting from the train despatching system has occurred! On three or four occasions accidents might have resulted from the negligence of train men and operators, but, at the same time, such accidents are just as likely to occur where trains are running wholly by time card. I have had some four or five different assistants, and between us all not more than five errors were made in these 75,546 orders, whereby damage might have resulted. I am free to confess that our system of train despatching is defective. By that I mean damage may result from the negligence of despatchers, station agents, operators and train men. The very best of men will sometimes make a mistake, and I do not know of a despatcher among my acquaintance who has not at some time made a slip.

Notwithstanding, being benefited by my past experience, I do not hesitate to use this system with the utmost assurance that no harm will ever happen through any fault of mine. From engineers, conductors and train men—those whose lives are at stake—I have never heard an expression of lack of confidence in our system; and in conversation with them on this subject they have, in every case, assured me of their high appreciation of its benefits. This appears rather remarkable, but it shows they are perfectly willing to accept whatever risk there may be for the benefits to be derived from the system now in use, though it be an imperfect one. That it can and will be improved is only a question of time. This agitation of the question will have a tendency to effect something in that way. If railroad managers, and those practically acquainted with the subject would take it in hand, much could be done. I favor the suggestion of one of your correspondents for a convention of superintendents and train despatchers to discuss the subject, have an interchange of views, and adopt such improvements as may be deemed expedient.

I am convinced that "Hindoo's" system can never be practiced by our Western roads with any degree of satisfaction. It is too cumbersome, and would not begin to accommodate our immense traffic over a single track during the busy season. Instead of helping trains along, it can easily be seen how it would, in many instances, hinder their progress. That it will ever receive favorable attention from R. R. managers or employees is extremely doubtful.

Before closing, I wish to point out the absurdity of one or two points which "Hindoo" attempts to make in his criticisms on the American system of train despatching. He says—

"Despatcher telegraphs to conductor, Express No. 1, North: 'I have given freight No. 2, bound South, until 10:40 A. M. to make B for you. Do not pass that station until that time, unless it has arrived, then go by rule.' Ans. 91. Conductor obeys this order literally. No. 2 left A in good time to make B by 10:40, but engine becomes disabled, or leaves track, or sticks on a grade. At 10:40 No. 2 not being in sight, No. 1, according to order, starts and 'goes by rule' into No. 2."

Now, suppose the time card made B the regular meeting place for No. 1 and No. 2 at 10:40. As in this case No. 2 leaves A in good time to make B at the proper time, but engine becomes disabled, &c., No. 1, having the right of way, goes ahead when the time is up, and, according to "Hindoo," runs into No. 2. That may seem very plausible to the unsophisticated, but any R. R. man knows that on every properly managed road there is a positive rule which requires conductors, in such cases, to station signal men at proper distances in both directions immediately upon stoppage of the train; which, of course, protects the standing train from being run into.

Again, in allusion to the recent collision on the R. R. I. and St. L. R. R., near Alton, he puts the question, "What has the Train Despatcher to say?" The fact

is, both trains were running wholly independent of the train despatcher, or of telegraphic orders.

When a railroad system shall be devised which shall render it impossible for accidents to occur, then the millenium will be at hand.

IOWA.

Incidents of the Second Convention of the National Telegraphic Union.

NEW YORK, April 16.

THE EDITOR OF THE TELEGRAPHER.

THE Second Annual Convention of the Telegraphic Union was held at Philadelphia, the writer being a New York delegate; and, thinking the old boys would like to hear from him, takes this method to relate an incident or two. The delegate, who was called by several of his associates "Bald Eagle," arrived at Philadelphia about noon, proceeded to the St. James Hall and presented his credentials, which were accepted. The "Deacon," "Alderman," from Hoboken, and the "Bald Eagle" were the New York delegation. The "Deacon" was widely known for his strictly teetotal principles; the "Alderman" for a genial whole-souled fellow, and the "Eagle" noted for anything which will serve his fellowmen. I beg to offer an excuse for the latter; he is so modest, you will excuse him so soon as you make his acquaintance, and the incident referred to will answer the purpose.

The Convention organized in the forenoon, and, after a protracted session, adjourned till evening. During the intermission the boys assembled in the room down stairs, and were introduced to the "Greene Bros." Eagle, being a stranger, was "taken" by the boys and left in a small room on the same floor with the meeting room. Soon afterward the Deacon came into the ante-room and aroused Eagle, who was enjoying a quiet snooze, demanding his vote. The sleeper was confused, being awakened so suddenly, and asked the Deacon if the meeting had made "nomernashuns" for delegates to the Philadelphia Convention? Deacon spoke sharply, and brought the youth partly to his senses; holding a slip of paper in his hand, he sternly demanded that the disgraced member from New York write the name of the candidate for Secretary of the Union, which the Eagle endeavored to do. It was, perhaps, legible to the Deacon, but Eagle could not recognize the name of K. McK., on being shown the paper the next morning. The slip was carried to the Secretary, and then Alderman obtained possession of it, saying he was instructed to obtain photographs of the same, and present them to the members of the Convention. The writer did not receive the promised copy.

The next evening, after the adjournment *sine die*, a party of gay youths might have been seen going up Broad street, singing merrily, and seeming to enjoy the hospitalities of the city accorded to them by "Old Woody." Jack F., Mike R. and Eagle will always remember the carriage ride, the visits to the engine palaces (then a volunteer organization), and the views of the Quaker City. "Woody," then a prominent member of Weccacoe Engine Co. (God bless him), is still working the "Comb" at Philadelphia; Mike is in New York, pegging away at the key; Jack F. is West somewhere, and if this should meet his eye, he will probably recognize the "picture;" Eagle is in New York, working at the old trade, and they do say he has reformed, and is trying to lead a better life.

I could mention other interesting incidents connected with that memorable trip to Philadelphia, but this will suffice for the present.

BALD EAGLE.

The Student Question.—A Test of Sincerity.

TO THE EDITOR OF THE TELEGRAPHER.

OF what can they be thinking, these contributors on the student question? They talk as if superintendents had a choice of operators from which to select.

The supply of this class of labor is ample, but offers no choice. The very best attainable men are employed; and, since new offices are being opened at the rate of thirty per month, telegraph managers are put to it to find even fifth rate men. Like the fixed stars—the lesser the magnitude the greater the number. So it is in the profession of the telegraph. What we must all strive to do, and accomplish it, too, is to see that operators of the best grade receive far higher compensation, and that skill of every grade receive pay according to merit, length of service, and a few other criteria. Then all would strive to become first class, but it's not worth while as it now stands.

I, for one, do not expect much advance in this direction, or any good direction, until every operator takes this paper on his own individual subscription. This would not be a guarantee of success; but if operators expect so much, and will do so little, they deserve to fall, fall, fall, to and below the level of sewing machine operatives. I do not see that operators, as a class, and to do business as it's now-a-days done, need have any more brains than a pumpkin splitter. It would be a slight token of earnestness if every man did plank down two dollars a year to help make this organ a power equal to the attainment of any good work.

Material which won't do this much for itself isn't worth the salt to save it.

If every man took the paper questions could be put, and voted up or down through your columns. Every subscriber could have a number, and thus you could show us the sentiment of the whole fraternity on any point two weeks after the question was put. Votes to go in by mail.

The Telegraph.

The Franklin Telegraph Company.

THIS company changed its management at the annual meeting in June, 1871, since which it has, says the *Boston Advertiser*, entered upon a career of increased prosperity, and promises not only to afford the public better facilities, but also to return to its stockholders a due reward for their investment. The company, to accommodate its increasing business between New York and Philadelphia, is putting up two new wires at a cost of \$20,000. The following were the earnings and expenditures for eight months ending December 31:

1870.	
Receipts.....	\$122,775 35
Expenditures.....	126,027 44
Net loss.....	\$3,252 09

1871.	
Receipts.....	\$142,094 77
Expenditures.....	120,929 77
Net earnings.....	\$21,165 00

Showing a difference between the two terms of \$24,417.09, or an average monthly difference of \$3,052.13.

The monthly earnings have been well kept up the present year:

	Jan., 1872.	Feb., 1872.
Receipts	\$18,458 94	\$17,713 93
Expenditures	15,260 77	14,664 47

Net earnings..... \$3,197 47 \$3,049 46

The present condition of the company is shown approximately by the following:

Capital stock, 10,000 shares, at \$100....	\$1,000,000
Stock issued, 6,000 " " "	600,000
Stock in treasury, 4,000 " " "	400,000
Bonded debt.....	100,000

The present earnings are from \$36,000 to \$40,000 per annum, above expenses, while the 4,000 shares in the treasury, if sold at \$29.30, will pay all debts. The stock has recently advanced from \$10 to \$21@22.

Consolidation of Atlantic and Pacific and Utah Telegraph Lines.

ADVICE from Salt Lake City, of April 26th, state that the Desert telegraph lines, connecting all the principal towns of Idaho, Utah and Arizona Territories, and the only direct lines to Pacific and Unionville, were yesterday consolidated with the Atlantic and Pacific Telegraph Company. Arrangements have been perfected, and additional lines will be immediately constructed to Star, Wan Wan, San Francisco, and the mining towns in Southern Utah, all of which districts are reported equally as rich in mineral deposits as the celebrated Pioche.

The large and commodious office in that city, formerly occupied by Warren Hussey & Co., as a bank, adjoining Wells, Fargo & Co., has been leased by the Atlantic and Pacific Telegraph Company, which, with their elegant city lines, speaks well for the enterprise of the company and their progress. These lines are now working in direct circuit with New York and San Francisco.

New Office of the Pacific and Atlantic Telegraph Company.

ON Wednesday last, May 1st, the main office in this city of the Pacific and Atlantic Telegraph Company, as previously announced in THE TELEGRAPHER, was removed from No. 23 Wall street to No. 14 Broad street, which office is being handsomely fitted up for the service of the company.

The Telegraphic Girdle Round the Earth.

THROUGH the extension of telegraphic facilities, the people on the other side of the globe have become our neighbors, and the dwellers in China can hold daily conversation with us. A gentleman writes to the *New York Evening Post* that, on the afternoon of Wednesday, 17th instant, he sent a telegraphic message to Hong Kong, China, and at 9 A. M. of Friday, 19th inst., had a reply, dated that day at Hong Kong. The message and reply, forty-one words, went round the world in something less than thirty-nine hours. This very nearly realizes the declaration of Shakspeare's "Pack," "I'll put a girdle round about the earth in forty minutes."

An Improved Morse Register.

AT the suggestion of Mr. Prescott, the electrician of the Western Union Telegraph Company, Mr. G. M. Phelps has designed a new style of Morse register, which, for efficiency in action and beauty of finish, surpasses anything of the kind we have ever seen. All the machinery, except the armature lever and the rollers which carry the paper, are enclosed in a dust proof case, the top and one end being composed of plate glass. The instrument is provided with an adjustable governor for regulating the speed of the wheel work, which is driven by a coiled spring, thereby dispensing with the clumsy weight pulleys and cord heretofore used. These elegant instruments are now being issued from the Western Union Supply Department.

Foreign Telegraphic Notes.

THE report of the Marcellis, Algiers and Malta Telegraph shows an available total of £9,784, and recommends a dividend of 8s. per share, or 4 per cent. Negotiations are in progress for an amalgamation with the Falmouth, British Indian and Anglo-Mediterranean Companies.

The net profits of the British Indian Extension Telegraph for the year amounted to £45,418, out of which the directors declare a dividend of 2 per cent., making, with the two interim dividends already paid, a total distribution of 8 per cent. for the twelve months. The amount left to be carried forward is £4,218.

The London Agent of the Great Northern Telegraph Company states that the traffic for the month of March, on the company's amalgamated lines, has been as follows: On the European lines, 34,294 telegrams, with revenue 99,884 francs; on the China and Japan lines, 2,832 telegrams, with revenue 99,000 francs; total 37,126 telegrams, with revenue 198,884 francs. In March, 1871, the traffic on the European lines was 39,235 telegrams, and revenue 111,875 francs; but the Continental holidays before Easter did not occur during that month, as was the case this year.

It is announced that the contract between the Société du Cable Transatlantique Français (Limited) and the Telegraph Construction and Maintenance Company (Limited), for the fourth Atlantic cable direct from England to New York, has been sealed and exchanged and that £100,000 has been paid on account.

The wires for connecting the newly erected telegraphic signal station at Lizard Point, Falmouth (about 23 miles), are nearly completed, and in a very short time the Post-office authorities will be enabled to commence the transmission of messages from such of the passing shipping as, under favorable circumstances of wind and weather, may open the needful code communication.

The directors of the French Atlantic Cable Company have resolved to pay the usual interim dividend of 2 per cent. on the first of May, for the quarter ended the 31st of March.

The total number of messages forwarded from postal telegraph stations in the United Kingdom during the week ended the 6th April, 1872, was 257,819—an increase of the corresponding week last year of 71,371.

The horse express, which is to connect the ends of the overland telegraph in Australia, is expected soon to be opened.

Portrait of Prof. Morse.

AT the meeting of the Board of Aldermen in this city on Monday last, Alderman Wilder moved that the Committee on Arts and Sciences be authorized to procure for the Governor's room a full length picture of the late Professor Samuel F. B. Morse, the cost not to exceed \$2,500. The resolution was laid over.

The Great Eastern and the New Cable.

SINCE 1865 the *Great Eastern* has been exclusively devoted to submarine telegraphic purposes, and during that time has laid in various parts of the world no less than 20,000 miles of deep-sea electric cable, all of which is now in good working order. The capital invested in those various cables is estimated at \$35,000,000. But the services rendered to commerce and humanity are incalculable. Time has been annihilated, and all the nations and families of men have been brought within speaking distance of each other. But for the *Great Eastern* it is almost certain the Atlantic cables would not have been laid. The huge vessel was alone capable of affording the accommodations required for stowing away the thousands of miles of heavy cable necessary, and, above all, she alone was found to possess the evenness or steadiness requisite for paying it out without difficulty or disaster.

But the laying down of the Atlantic cables constituted only a portion of the services of the *Great Eastern* to humanity during the last seven or eight years. She has laid down submarine cables in all parts of the world. The British, Australian, China, Submarine, British Indian, and British Indian Extension are only a few of the enterprises in which she has been engaged. She has traversed the Pacific, the Southern and Indian Oceans, as well as the Atlantic, in her errand of civilization.

The *Great Eastern* has been once more chartered to lay a fourth transatlantic cable, and is now lying at Sheerness awaiting its completion. The contract for the new cable has been completed and duly signed. The cable is to be manufactured by and laid down under the auspices of the Telegraph construction Company of England.

Telegraphing at Sea.

CAPTAIN COLUMB, R. N., in a paper recently read before the Society of Telegraph Engineers, London, said:

"Telegraphing at sea by night was confined to a very few set messages, represented by white lights displayed in different numbers and forms; this was continued until twelve years ago, when what is now called the 'flashing system' was introduced, which has since been completely adopted in the English navy and army. This is nothing more than the adoption of the 'dot and dash' of Morse, or the 'long and short flash,' as they are now called, to universal application."

It was shown how, by the long and short display of a single light, the long and short wave of a flag, the long and short appearance of any object, or the long and short sound on a horn or steam whistle, all the present wants of telegraphing at sea were supplied.

The paper was illustrated by various diagrams and specimens of apparatus actually in use, one of the most important being a flashing light, known as the Chatham light, of great power and simplicity, the light being produced by jets of diluted magnesium powder into the flame of a spirit lamp.

It was shown that all telegraphy was reducible to a system of visible or audible signs following in certain succession. The means of distinction in visible signs were differences of form, color and motion; in audible signs differences of tone and motion (or time), while semaphores represented form, and flags color and form; the most powerful distinction of all—motion—was more practically employed until the flashing system made its appearance, and it not only threw open the hours of darkness to the purposes of telegraphy at sea, but it made the transmission of messages more rapid, while enormously extending their range. Instances were given of messages sent thirty miles from mid-channel to the coast of England at night, and of messages read by the naked eye in the day time, when flags could not be read with the most powerful telescope.

THE Pacific and Atlantic Company have erected a lofty pole in front of their new office, at 14 Broad street, and adorned it with red paint and Brooks' insulators. This company always comes out strong on vermilion.

New Patents.

For the week ending April 23, 1872, and each bearing that date.

No. 125,920.—UNION STOP FOR PRINTING TELEGRAPHS. Martin F. Weissmann, Brooklyn, N. Y.

1. A union device for printing telegraph instruments, brought directly into action by the revolution of a single cog or projection, B, on the type wheel shaft, substantially as herein set forth.
2. The union device herein described, consisting of the disk A, which has the movements specified, produced by the cog or projection B on the type wheel shaft, and the lever D or its equivalent, operated by the printing magnet, in connection with the counter springs a b and detent c, substantially as herein set forth.

No. 126,027.—INSULATOR FOR TELEGRAPH WIRES. Joseph L. Conklin, Jr., New York.

1. A wrapping of mica introduced between the metallic pin and the body of the insulator, substantially as and for the purposes set forth.
2. The cap m with the dovetail l, in combination with the insulator c and pin a, the latter being formed with a tapering head, as and for the purposes set forth.

No. 126,088.—FASTENING TELEGRAPH WIRES TO INSULATORS. Dennis Doren, New York.

1. A telegraph connecting or tie wire, insulated itself, in combination with an insulator, to which it is secured, and the line wire, essentially as described.
2. In combination with an insulator, a telegraph line wire, and an insulated tie, I claim an insulating sheath or saddle for the line wire, essentially as described.

No. 126,048.—PRINTING TELEGRAPH. Robert H. Gallaher, New York.

1. The arm A, attached to and moving directly with the magnet armature or its cross head B, and provided with the pawls or dogs c d for operating the ratchet wheel D on the type-wheel shaft, substantially as herein specified.
2. In combination with the above, the detent projections f g on the inner curve or bend of the arm A, substantially as and for the purpose herein specified.
3. The stationary paper holder e, formed of a bent wire, or as an open bow, arranged in combination with the type wheel B and the printing hammer, substantially as herein specified.
4. The mode of bringing the type wheel battery or part of battery into the printing magnet circuit in conjunction with the printing battery or part of battery by means of the printing key, substantially as herein specified.
5. The arrangement of the printing key or circuit closer upon the type wheel index or key of the transmitter, or the union of the two in one, substantially as and for the purpose herein specified.

Died.

ASHLEY.—In this city, Sunday evening, April 28th, at the residence of his sister, No. 666 Second Avenue, of congestion of the brain, WILLIAM W. ASHLEY, an operator in the office of the Atlantic and Pacific Telegraph Company, No. 11 Broad street.

Obituary.

WILLIAM W. ASHLEY, whose death is announced in the present number of THE TELEGRAPHER was one of the oldest telegraph operators in the country. He was quite extensively known among the telegraphic fraternity of the country, having during his protracted connection with the telegraphic interest served in many offices in different sections of the country.

For some time previous to his decease he was employed in the office of the Atlantic and Pacific Telegraph Company, at No. 11 Broad street, in this city, where he commended himself to his employers and associates by his efficiency, and his quiet and amiable characteristics. He was much respected, and is sincerely mourned by his late associates.

OSCAR JENNINGS.

At a meeting of the telegraphers of Chicago, held at the office of the Western Union Telegraph Company, on Saturday, the 27th inst., the following preamble and resolutions, expressive of the feelings of the fraternity, upon the recent decease of Mr. OSCAR JENNINGS, were unanimously passed.

Whereas, It has pleased God to remove from us our friend and co-laborer, OSCAR JENNINGS, and
Whereas, During his long association with us we had learned to esteem him for the many kindly qualities of his head and heart,

Resolved, That we suffer in his death the loss of a kind, unselfish friend, and genial, warm hearted companion.

Resolved, That we tender to his bereaved relatives our heartfelt sympathy in this hour of affliction.

Resolved, That copies of these resolutions be forwarded for publication to the *Journal of the Telegraph*, THE TELEGRAPHER and daily papers of Chicago.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, MAY 4, 1872.

Signs of Progress.

THE announcement has recently been made that the Western Union Telegraph Company has acquired the exclusive ownership of Mr. JOSEPH B. STEARNS' patents of 1868, for transmitting telegraphic communications in opposite directions at the same time by means of a single wire. We are glad to know that the merits of this most valuable invention have at length been recognized by the principal telegraph company in this country, and are encouraged to hope that it may lead to the adoption by them of several other well known and well tested improvements, of which they stand very much in need.

Mr. STEARNS perfected his instrument, after much study and experiment, more than four years ago, and placed a set of them on one of the wires of the Franklin Company between this city and Boston, in March, 1868, which have constantly been at work from that time until the present. The apparatus was subsequently placed on other lines of the Franklin Company, and also on the Great Western between Chicago and Milwaukee. Recognizing at once the immense practical value of this system, as exemplified by its successful operation upon the Franklin lines, we published in THE TELEGRAPHER of May 2-9, 1868, a complete history of the double transmission system, with descriptions and illustrations, although the great practical importance of Mr. STEARNS' improvement, in ensuring the complete reliability of the apparatus, was not at that time fully appreciated even by ourselves. As long ago as August of that year, in the course of an article on "The Future of the Electric Telegraph," we stated that this invention was "destined to play an important part in augmenting the working capacity of our through wires." The recent purchase of Mr. STEARNS' patent by the Western Union Company at a very handsome figure, and its adoption on all their principal through wires as fast as the instruments can be manufactured, is a gratifying fulfilment of our prediction.

It is a little amusing, in this connection, to note the fact that, in President ORTON's report to the Western Union stockholders, in July, 1869, after this invention had been in successful daily use on the Franklin lines for more than a year, we find the following allusion to it:

"The double transmitter—an apparatus for working both ways over one wire at the same time—has also long occupied a prominent place among speculative (?) telegraphers, and has been extensively advertised by the promoters of various competing lines. During the past twenty years there have been several inventions for accomplishing this result, the first being that of Dr. GINTL, of Germany; but while it is possible, under certain exceptional circumstances, to transmit messages both ways at the same time over one wire, the conditions under which this result are obtained are such as to render the general use of the system impossible. If there were, however, any practical value in this apparatus its use—like that of the Morse telegraph—is freely open to all."

It is gratifying to see it stated, apparently upon authority, that the actual money value to the Western Union Company of this once despised and ridiculed invention is estimated to-day at no less than a quarter of a million dollars per annum. The history of this invention, as well as that of the PAGE patent, irresistibly reminds us of a certain passage in Scripture, running in this wise: "It is naught, it is naught, saith the buyer, but when he has gone his way then he boasteth."

It is hardly fair, however, to "poke fun" at the Western Union for abandoning their old foggy ideas. The adoption of the STEARNS' instrument is in the highest degree creditable to them, and we have no doubt that, some time or other, they will follow the good advice of THE TELEGRAPHER still further, abandon their antiquated and ridiculous system of batteries and insulation, and get rid of some of the old Bourbons who

infest the engineering department, and make the company a laughing stock to well informed electricians. It will certainly afford THE TELEGRAPHER the greatest pleasure to record any advances that may be made hereafter in this direction.

Reconstruction of Western Union Lines.

THE Western Union Company are doing a good deal of work this spring between New York and Washington. The wires on the west side of the railroad between Baltimore and Washington are being reinsulated. The line on the same side of the road between Newark and New Brunswick is to be reposed and reinsulated. A good deal of work is also being done between Philadelphia and Wilmington. Three wires on the B. & O. R. R., from Baltimore to Grafton, West Va., have been reinsulated, and a fourth wire strung. The old insulation, which is being removed, is mostly LEFFERTS. This is being replaced by the new style glass and pin. This latter invention is responsible for the alarming increase in the use of profane language among the Western Union line men, which has attracted the attention of all good people since last fall. In this connection it may be proper to record the significant fact that a member of the Young Men's Christian Commission was seen distributing tracts against profanity among the men at work on the line near Elizabeth, N. J., a few days since; but while General Superintendent ECKERT insists upon the continued use of these insulators we fear that such efforts will meet with little practical encouragement.

The Gold and Stock Telegraph in England.

Mr. E. A. CALAHAN, inventor of the original Gold and Stock Telegraph reporting instrument, and until recently Superintendent of the Gold and Stock Telegraph Company, sailed in the steamship Russia, on Wednesday of last week, for Liverpool. A company has been organized in England to introduce the Gold and Stock Telegraph system in London, and eventually in other leading cities in Great Britain, and Mr. CALAHAN has gone out for the purpose of personally superintending the introduction and organization of the system in London. His experience in the business in this country peculiarly qualifies him for the position; and although our British cousins are not usually disposed to regard innovations and improvements with favor, the merits and advantages of the system are so great that there is little doubt that ultimately this American notion will become popular and profitable there as here. A special act of Parliament has been obtained, under which the company is organized, and the system will be established.

Increase of Telegraph Rates.

By an arrangement between the several telegraph companies, on the first inst. the rates for messages from this city to Cincinnati, Dayton and Springfield, Ohio, was increased from 60 and 4 to \$1.00 and 7, the business having been found unremunerative at the former rates. We understand that the rates to many stations at which the Western Union and Pacific and Atlantic Companies compete for business, especially in the oil region of Pennsylvania, where the rates heretofore have been unprofitably low, have been considerably increased. We shall hereafter give more particularly the new rates and the advance decided upon.

Copper Wire of High Conductivity.

SEVERAL samples of copper wire furnished by Messrs. JOSEPH MOORE & SONS, of 537 China st., Philadelphia, have been carefully tested for conductivity by Mr. DAVID BROOKS, with very remarkable results, the mean of several tests showing 99.7 per cent. of the conductivity of absolutely pure copper. A sample tested by Mr. F. L. POPE confirmed the figures of Mr. BROOKS. We learn from Messrs. MOORE & SONS that a specimen was also forwarded to SIEMENS BROS., London, who obtained corresponding results, and state that they have never known any wire to equal it in conductivity. The wire furnished by Messrs. MOORE & SONS has always had a high reputation, which will be greatly increased by the remarkable results obtained in the above experiments.

THE American sounder is rapidly coming into use in England.

The American Fire Alarm Telegraph.—Additional Contracts.

Messrs. GAMEWELL & Co. have just closed contracts for the introduction of their Automatic System of Fire Alarm Telegraph at Terre Haute, Indiana, and Newport, Kentucky. The automatic system is specially adapted to cities and towns not sufficiently large to warrant the maintenance of a central office. Any city, town or village of any size should be provided with this excellent and economical system of Fire Alarm Telegraph, and we are pleased to see that this fact is becoming generally recognized, and that GAMEWELL & Co. are being rewarded for their energy, liberality and enterprise.

A Most Excellent Appointment.

Mr. WM. H. SAWYER, whose appointment as Acting Superintendent of the Gold and Stock Telegraph Company we announced a few weeks since, upon the retirement of Mr. E. A. CALAHAN from the superintendency, which he had held from the organization of that company, has resigned the position, and accepted the appointment of General Superintendent of the American District Telegraph Company. This is a most excellent appointment, and we congratulate the American District Company in having secured his services.

Mr. SAWYER is an expert in telegraphic matters, and a conscientious, intelligent and industrious official, and will, without doubt, add to his already excellent reputation, and greatly advance the interests of the company with which he has connected himself. He has the best wishes of THE TELEGRAPHER for abundant success in his new position.

L. G. Tillotson & Co.'s New Shop.

THE business of L. G. TILLOTSON & Co. has long since outgrown the facilities afforded by the shop in Elm street, which they have so long occupied. They have accordingly yielded to the pressure, and have taken and fitted up the entire upper floor of the CORNELL Building on Centre street. Here plenty of room is afforded for carrying on the manufacturing which has become so extensive a branch of their business. New and first class machinery has been put in, and Superintendent PIERSON and his assistants are much rejoiced at the great change and improvement they enjoy in their new quarters. We shall soon give a detailed description of the new shop.

Telegraph Operators' Badge Pins.

WE call attention to the notice of Mr. A. C. HARVEY to telegraph operators in our advertising columns. Complaints having been made of the non-receipt of pins ordered, and for which money has been sent to HARVEY & DOW, at St. Johnsbury, Vermont, Mr. HARVEY has taken the management of the business into his own hands, and will see that justice is done to all parties interested. Those who have been heretofore unable to obtain satisfaction for money forwarded, or who have failed to receive badge pins ordered, are requested to immediately communicate the facts to Mr. HARVEY, at Lyndenville, Vermont, at once, and he will see that they are satisfied without further avoidable delay.

A Hard Case and Wicked Use of the Telegraph.

It is surprising what crotchets valetudinarians will harbor. Here is an invalid lady in a New England town who is greatly distressed by the noisy vibrations of the telegraph wires which pass over her house. The company have moved their wires once to relieve her, but did it in such a way that, as she says in a little publication which she has made on the subject, "the incessant roar and ring" were "twice or three times as loud" as before. Ultimately she was forced to pay \$75 to cover the expense of having the poles carried far away from her domicile. Personally, she is rid of the Aeolian noises, but her distrust of telegraph companies has not in the least abated; for, in a handbill which she has obligingly forwarded to us, she expresses the opinion that telegraphs "are established and stretched through every nook and corner of the land," not only for the purpose of keeping invalid ladies awake, but "by a secret and designing party of politicians, for the express purpose of ascertaining the exact state of affairs, and controlling as far as possible the free suffrages of the people." As she would never have thought of this if the noisy wires had not kept her awake, we are happy to believe that the worthy woman is quite mistaken.—*New York Tribune.*

16,000 MILES
OF
"JOHNSON'S" WIRE
USED BY THE
TELEGRAPHS OF THE UNITED STATES
DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
MANCHESTER, ENGLAND.

Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

TELEGRAPH LINES

OF ANY LENGTH FULLY EQUIPPED WITH

WIRE, INSULATORS, BATTERIES,
INSTRUMENTS, ETC.

L. G. TILLOTSON & CO.,
No. 8 DEY STREET,
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Sole Agents for "Johnson's" Wire.

" " " American Compound Wire.

" " " Cauvet's Patent Screw Insulators.

" " " Sam'l O. Bishop's Insulated Wires and Cables.

" " " Brooks' Patent Paraffin Insulators.

Manufacturers of every description of

TELEGRAPH APPARATUS.

R. S. WHITCOMB,

CHICAGO, ILL.,

DEALER IN TELEGRAPH POLES

keeps constantly on hand and for sale a full assortment of all lengths and sizes of TELEGRAPH POLES, and is prepared at all times to fill orders and make contracts for supplying Poles on the shortest notice.

Yard and Office on FISK STREET, near TWENTY-SECOND, Chicago, Ill.

CHARLES WILLIAMS, JR.,
(ESTABLISHED 1856.)

109 Court Street, Boston,

has for sale the various kinds of Office and Magnet Wires, including Cotton Covered, Silk, Gutta Serena, Painted, Fancy, and DAY'S KERITE COVERED WIRE.

NOTICE.

TELEGRAPHERS and others who have sent money to HARVEY & DOW, at St. Johnsbury, Vermont, for Badge Pins, and who have failed to receive the Pins ordered, are requested to communicate the facts to the undersigned, who will, upon receiving evidence of the sending of the funds, see that they are satisfied.

Address,

A. C. HARVEY,
Lyndenville, Vt.

WANTED,

A GOOD LINE MAN

IMMEDIATELY.

Address, stating terms, etc.,

I. W. COPELAND,

Supt. D. C. Telg. Co.,

Fishkill-on-Hudson.

AMERICAN FIRE ALARM AND
POLICE TELEGRAPH.

GAMEWELL & CO., Proprietors,
104 CENTRE STREET, NEW YORK.

J. W. STOVER,

General Agent and Superintendent.

L. B. FIRMAN, Chicago, Ill.,

General Agent for the West and North West.

J. R. DOWELL, Richmond, Va.,

Special Agent for Virginia and North Carolina.

J. A. BRENNER, Augusta, Ga.,

Special Agent for Georgia and South Carolina.

L. M. MONROE, New Canaan, Conn.,

Special Agent for New England.

THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

Albany, N. Y.,
Alleghany, Pa.,
Boston, Mass.,
Bridgeport, Conn.,
Buffalo, N. Y.,
Baltimore, Md.,
Chicago, Ill.,
Cincinnati, Ohio,
Columbus, Ohio,
Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
Washington, D. C.,
Worcester, Mass.

The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM
AND
POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original FARMER & CHANNING PATENTS, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

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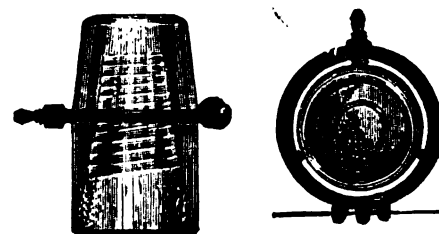
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2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

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As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

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3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

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In other specifications a breaking strain of 1,260 pounds on No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

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The capacity or endurance of No. 9 is 21 to 23 TWISTS UPON ITSELF in six inches of length, after having been subjected to the two per cent. of elongation.

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with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

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never broke at less than 21 twists, and once at 29. The omission of the elongating process would increase the flexibility and the tenacity.

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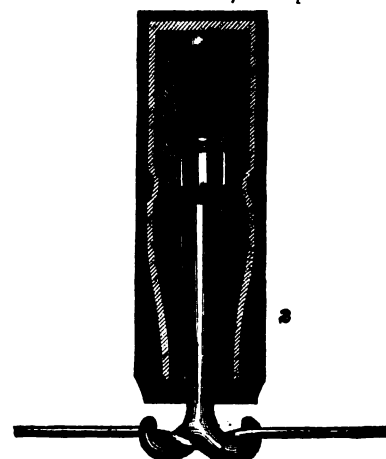
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The Telegrapher

A Journal of Electrical Progress.

Vol. VIII.—No. 38.

New York, Saturday, May 11, 1872.

Whole No. 304

Original Articles.

Train Despatching.

We have received a large number of communications on the subject of train despatching, which the limited space at our disposal prevents our publishing in full. As many of these letters, however, contain points of value, we will endeavor to make a summary of them for the benefit of our numerous readers, who are more or less directly connected with the railroad interest.

Our correspondent, "M.," says that the continual changing of employes on Western roads makes more trouble than any other one thing. He says: "I have been in the West some years, and have noticed that as a general thing Superintendents do not stay over a year or so on one road, and every time the Superintendent is changed you can look out for a change on the whole road, in every department. It is not as it is in the East, where new Superintendents are satisfied with the men in the employ of the company at the time of their taking the road. The changing of employes on a road is bad policy, and should not be tolerated by the company unless there are good reasons for doing so."

"G. T. R.," of Toronto, favors the proposed Convention of Chief Train Dispatchers, and the adoption of a universal system of despatching. He prefers the system used on the Grand Trunk of Canada, which he describes as follows: "The order is sent to the agent, stating the train having right of track must cross the other train at his station. The reply is received by the despatcher, then the order is given to the latter train. When crossings occur with express and freight trains, or with two express trains, at stations where such expresses are not timed to stop, an order is sent to the conductor and driver (as well as to the operator) at some previous station, and their reply received—thus removing all possibility of mistake by the operator. As an additional precaution, and as a guard against forgetfulness on the part of the operator, each train, before leaving a station, must receive from the operator in charge an order stating no crossing has been arranged there for that train. With this check upon him, I fail to see how any operator can be so negligent and forgetful as to allow a train to proceed when a crossing has been arranged. This system is allowed to be much easier on the despatcher; and, by employing none but reliable men—not those 'negligent and careless' ones 'P. J.' speaks of, when showing the liability of accidents through this system—any doubts as to safety will be removed, while it can be worked with great satisfaction to the train men as well as to the despatchers."

The system used on the Pittsburg, Fort Wayne and Chicago Railroad seems to be a very good one, and is at the same time somewhat novel in some of its details. The orders are worked so that the same one will serve for both trains, thus: "To conductor No. 1, A; conductor No. 2, C; Nos. 1 and 2 will meet and pass at B," or "No. 11 has until 3.45 P. M. to run to B ahead of No. 1," or "No. 2 will run to B regardless of No. 1," or No. 5 can use 10 minutes on time of No. 7 to run from A to B."

When an order is to be sent the despatcher calls up both offices, and sends it to each at one writing. All orders are copied on manifold paper, by which any required number can be taken at once, with the absolute certainty that they will all be exactly alike. For convenience, the manifold paper is prepared in packages, and marked 3, 5, 7, &c., as the case may be, so that the operator can, on the instant, be ready to copy as many as the despatcher may request.

These orders are then signed by the conductors and repeated back. With the despatcher's O. K. the exact time from the regulator is given, by which conductors and operators can note any variation of their time-pieces. All orders are numbered by the despatcher—thus, in repeating or referring to them at any time, the order meant is readily designated by the number. Two copies of each order are given to each conductor (one for the engineer). As the freight trains frequently run in sections of two, four, or more, the despatcher always notifies the operators how many copies to make.

It would seem that the above method of sending manifold train orders would do more business in less time than anything which has yet been brought for-

ward. We have several other communications, which we will endeavor to find room for at an early day.

Humors of the Telegraph.

We hope that our valued contributors, who have from time to time sent in a "good thing" for the funny department of THE TELEGRAPHER, will not be discouraged at their failing to appear in its columns for some time afterwards. Good jokes are like precious stones, they shine more brilliantly in a cluster than when set singly. So it has been our custom to have our laugh over each one as it came in, and then put it away in the editor's drawer until we obtained a quorum. We hope this explanation will prove satisfactory; but if any one is aggrieved over the matter, we advise them to read the remainder of this article, when they will doubtless "feel better."

The member from Oregon always has something particularly edifying to relate, so we will yield the floor to him first:

Any one who has ever been in Oregon, and some who have not are aware that many parts of that country are, as the agricultural reports say, "heavily timbered"—that is to say, pine trees about 20 feet in diameter and 300 feet high stand as thick as straws in a wheat field! One day a "ground" of huge dimensions came in on a certain Western Union wire running through a tract of country similar to the above, and the line man was ordered out on horseback. Eventually he found that one of these forest monsters, about five feet in diameter, had fallen upon the wire and crushed it into the damp earth, without breaking it. He dismounted, tied his horse, and surveyed the situation. Forty men couldn't have taken that tree off the wire. He took a big think, and was just in the act of solemnly shaking his head over it, when an idea struck him. He left his horse and hurried back to the nearest town, a mile and a half. He chartered a cross-cut saw and two competent artists to work it. The full strength of the company attacked that tree and sawed it twice in two ere the shades of evening closed about the scene. Then they removed the "chunk" and allowed the wire to resume its normal position. After having safely accomplished this unparalleled feat, our hero returned to the office and reported. He was badly taken down when the operator suggested that he might have got the line O. K. a little sooner if he had cut the wire and spliced it above the tree.

That repairman would make a good District Superintendent. His qualifications for the "posish" are unexceptionable.

Here is another good one, from the same correspondent:

Train despatcher telegraphs to the agent at a certain station, who did his own operating—such as it was—to "have the racks taken off the coal cars." Agent translated this as "cow cars." Couldn't understand it exactly, but finally arrived at the eminently intelligent conclusion that it must be a slang term for "cattle cars," of which there were a number on the siding; so he set the section men at work with axes to cut away the racks. In about ten minutes came another message inquiring "if the racks had been taken off the coal cars, as directed." He received it right this time, and instantly realized the situation. One might have played checkers on his coat tails as he rushed out to stop the work of destruction. But it was too late. The men had obeyed orders only too well, and several "cow cars" had to go to the repair shop.

A well known telegrapher of this city sends us the following, which ought to have been printed before this, but might have been kept longer, if necessary, without danger of spoiling. He writes—

"While attending the funeral of the late lamented Professor Morse I found myself seated, by chance, in a carriage with a well appearing young gentleman of about twenty-six summers, who was disposed to be quite communicative. He took early occasion to let me know that he was manager, operator and *charge de batteries* of the Erie Railway office not over a thousand miles from N—. Perhaps the Erie boys may recognize his picture. I didn't let on that I knew the telegraph from a teapot, as I saw he was very anxious to explain how much he knew about that mys-

terious invention; so I casually ventured to make the highly original remark, 'This telegraph is a wonderful thing!' 'Yes, it is that,' was the immediate reply; 'I can write quicker than you can speak.' 'Indeed; do you mean by pen or telegraph?' 'Either,' he replied. 'When was this telegraph invented?' inquired I. 'In —, 1840.' 'Ah, indeed. What was the first instrument like?' said I. 'Well, I'll explain it to you,' said he. 'You see, it was a round thing like this (describing a circle about a foot in diameter with his finger). All around the edge was the alphabet, and the figures down here. Well, you touched this letter, say, and the spark flew over the line and showed that letter at the other end.' How many wires did you say there was between the two stations?' said I. 'One.' 'Well, I don't see how it was that the spark at the other end went to the right letter.' 'Ah, that was a secret known only to Morse himself, which he never imparted to any one except his brother Sidney!' I still objected that I could not see how the signals came out properly at the distant end. 'Well,' said he 'it is like this: You take a glass tube; you drop in a white ball at this end—it comes out white; then you put in a black one and it comes out black. See!' I expressed myself as being entirely satisfied with this lucid explanation, and remarked, 'Those batteries you use must be great things; who invented them?' 'Morse did.' 'What principle do they work on?' 'Well, they are a combination of hydrogen and nitrogen mixed with oxalic acid and diluted, and that makes the spark.' 'Wonderful!' said I; I suppose Mr. Morse must have been a very wealthy man.' 'Oh, yes; our Government gave him several thousand dollars, and they gave him more than \$400,000 in Europe a few years ago.' It was only the lack of time that prevented me from extracting a large amount of novel and valuable information of the above character from this young man. As these facts were not generally known I thought you might like to give them to your readers."

Apropos of Prof. Morse, a good story is told of a youth named C—, who, at the time of which we write, had recently been inducted into the "peeseniss," and had charge of a certain branch office in this city. On Prof. Morse's return from Europe on one occasion he stepped into this office, wrote a message to his family, notifying them of his arrival, marking it, as was his custom, with a curiously scribbled skull and cross-bones, signifying "dead head," and handed it to C— for transmission. The latter inquired what the "diagram" meant, which the venerable Professor good-naturedly explained. "Yes," persisted C—, "but why is it to go D. H.?" "Well," said the Professor, "the operators have usually been accustomed to send them free for me—probably out of compliment to me as the inventor of the instrument on which you are working." C— turned around and stared at him with open mouthed astonishment. "Did you invent the telegraph? Be you Cyrus W. Field?" Such is fame!

How easy it is to misplace a space; and yet that misplaced space will throw a telegraphic message off the track, down the bank, and make a hopeless wreck of it with as much certainty as a misplaced switch will do the same thing for a railroad train. We have quite a little collection of these accidents on hand, which our friends have forwarded at various times, but most of them are not particularly entertaining, except to show how outrageously a stupid "plug" will murder the king's English if he gets a chance. For instance, we have "W. O'Brien" transmogrified into "Wobrian," "J. O'Connor" into "Joccinar," "Or red" into "Oreix," etc. One practitioner received "zincs" as "seinces." One of the best things in the line of bulls that has come in for some time is the following—on the strength of which we will "adjourn the meetin'!"

The following message, "Get black satchel, with rope round it, from smoking car, and leave at —," was received, "Get black hat with *crape* round it," etc.

If anything good in this line turns up, we would be happy to have our friends send it to us; and, as our friend J. C. H. used to say, we will "place it on file."

THE conductivity of wire drawn from Lake Superior copper has been found, in some cases, to be more than 99 per cent. of the standard for pure copper.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Safety and Reliability of the American System of Train Despatching.

MICHIGAN, April 17.

TO THE EDITOR OF THE TELEGRAPHER.

PERCEIVING with pleasure that you have not tired of the important subject of moving trains by telegraph, I would once more offer a few remarks, by way of explanation to my former brief communication.

"Hindoo's" suggestions of a system similar to that used in India I do not approve of, inasmuch as it, to my idea, contradicts itself. He speaks of poor operators, and the dangers of *bulling* an order. Now, it is certainly no remedy to compel trains to get orders at every station on the route—making ten orders to one given under the American system—thus providing ten chances of mistakes to one by the latter.

In America we have through trains making runs varying from thirty to seventy miles without stops, passing numerous stations and side tracks; and, on the road in whose office I write this, a train will meet from ten to fifteen trains in that distance; and, having the right of track, would proceed without fear or the least chance of a collision, as those trains of inferior class are provided for in time card rules, and must be on side track out of the way at least six minutes before superior classed trains are due. This rule is certainly safer than that of "Hindoo," whose idea would be to run the train by orders from each and every station. I have yet to hear of a collision through train men not understanding or mistaking a time card rule.

I had not intended specifying the manner of moving trains on this, the old popular and reliable Michigan Central, but feeling that it embraces in its long established system all that is safe, and keeps moving without delay the many trains now running upon its single track, I believe it would profit many equally extensive roads to copy it.

Our trains are classed 1st, 2d and 3d, and have rights accordingly—the 1st class having the right of way over the 2d and 3d going in either direction, and the 2d over the 3d in the same manner.

Marshall station being the terminus of the Middle and Eastern Divisions, is our centre of gravity (so to speak), and our time card rules make trains approaching Marshall have the right of track over trains of the same class going from Marshall. For instance, the mail train east has the right of track over the mail train west until the former has passed Marshall, when it loses its right and must keep out of the way. Trains not having the right of track must wait indefinitely for approaching trains unless otherwise ordered by the train despatcher, making that important rule simple and free from any chance of misunderstanding. (The matter of having a central point for changing rights is, of course, insignificant, and it would be just as well for trains to have the right, say going east, over the entire road.)

The plan of registering trains, as spoken of by "Hindoo," has long been practiced here. We have printed form books at terminal stations, and conductors invariably register the arrival and departure of their trains.

When trains stop they report themselves to the operator, who is held equally responsible for a correct report of arriving and leaving, if they even stop but one minute. We figure trains here by minutes and not miles, and a wrong report is detected by the train despatcher in a second.

We certainly have the advantage of "Hindoo," and of all the suggestions I have seen in the matter of receiving orders and copying the same, to avoid the possibility of a mistake.

The order is sent by the despatcher, who manipulates the key; a reliable operator sits by him and copies the order, as sent, in a book; the operator receiving the order copies it with ink on a special blank provided for that purpose; the conductor and engineer reads the order, and, if understood, they also sign it with ink, when it is sent back to the train despatcher, copied by his operator under the original, and, of course, also watched by the train despatcher, who, if it be all right, will send back his O. K., which must be placed on the back of said order before it is valid. It is then copied in an impression book, so that the train man and operator both have the originals.

I had intended saying a word to "Safety" about time orders, which he considers unsafe; but I have already trespassed too much, and will only say that time orders judiciously given are the best, and, in fact, the beauty of the American telegraph system of train despatching.

Here we do not give trains of similar class time orders against each other; but 2d and 3d class trains against 1st class trains have always time orders only.

We have about five freight to one passenger train, and the chances of freight trains breaking down to that of passenger trains are about ten to one; and I do not remember an instance where freight trains, failing to make time orders, have been detained much more than if they had stayed back, which they would have had to do had the train despatcher supposed they could not make it. And, in fact, the time orders are given alone to provide against freight trains breaking down and

detaining passenger trains, and not with a view to hurrying up the former.

Our code of flag rules are perfection; of which I will speak hereafter. MAC.

Demonstrations in Honor of Professor Morse.

BURLINGTON, IOWA, April 17.

TO THE EDITOR OF THE TELEGRAPHER.

I WISH to submit to the readers of THE TELEGRAPHER a statement of the proceedings of the Morse Memorial meeting held in this city last evening, to show that the people of Iowa are not dead in appreciation of the great worth and benefit which the late professor has been to the world.

Pursuant to the call of the Committee at Washington, for the cities of the United States to hold memorial meetings simultaneously, that all might have a chance to express their sympathies with each other in the death of this great and good man, by the aid of this lightning strand, a meeting of the citizens and telegraphers of this city was called, and the following resolutions were unanimously adopted, and telegraphed to the Chairman of the Committee, at Washington, D. C.:

"Whereas, it has pleased the Divine Ruler of the Universe to call hence Professor Samuel Finley Breese Morse, America's most distinguished citizen, who has gone to the heavenly garner like a ripe sheaf in its season, crowned with his reward; therefore, be it

"Resolved, That we honor the memory of Morse, as one of the greatest benefactors of the human race, in subjecting the Powers of Nature to human control, so as to combine the inhabitants of the globe as one family.

"Resolved, That we praise the Lord that it is permitted to us to control the Powers of Nature and to make them obedient to our uses, and that we regard the past triumph of Morse as the herald of new and further advancement in the field of science.

"Resolved, That his rare attainments, accurate judgment and comprehensive intellect (that enabled him to grasp and utilize these mobile, elastic, imponderable Forces of Nature and make them subservient to man, with all their quickening powers upon trade, commerce and human progress) command our grateful admiration and regard.

"Resolved, That a copy of these resolutions be transmitted by telegraph to the Central Morse Memorial Association at Washington.

(Signed),

D. ROVER,

Chairman.

A. T. HOY, } Committee on Resolutions.
H. W. STAR, }

Addresses were made by some of Burlington's most distinguished scholars—among them Rev. Dr. Salter, whose address was a beautiful tribute to Professor Morse as a Christian, a gentleman, and a man of science. He spoke of having been personally acquainted with the revered Father of the Telegraph, and stated that no one could know and not love him. I would like herein to transcribe the address in full, but space forbids. The hall was provided with a set of instruments, attached to the main line, at which Mr. Ludwig, the worthy manager of the W. U. office, presided, and despatches were received and read to the meeting from San Francisco, Milwaukee, Ottumwa, Iowa and other cities. The following message was then sent to the meeting at Washington:

"The citizens and telegraphers of Burlington, here assembled, to the National Morse Memorial Meeting at Washington, greeting: We mourn with you the irreparable loss of one of America's greatest benefactors. (Signed), GEO. ROBERTSON, Mayor."

The operators, sixteen in number (all that could be off duty), in respect to their cherished benefactor wore rosettes of mourning. The hall was appropriately draped, and everything conducted in the most respectful and imposing manner.

On receipt of the news of the death of Professor Morse all the telegraph offices were appropriately draped in mourning—so to remain for a period of thirty days.

I regret to say that no demonstrations of respect, so far as heard from, were manifested by our sister cities, Quincy, Keokuk and Galesburg—owing, I presume, to the thoughtlessness of the citizens, and not of the telegraphers. Though our great and venerated Father of the Telegraph has departed this life, he has left his image in his great work, which connects all the families of the earth; and, so long as it exists, may they look upon it with just appreciation, and call to mind the name of Morse. A. R. F.

The Western Union and the New Orleans Cotton Exchange.

NEW ORLEANS, LA., April 26.

TO THE EDITOR OF THE TELEGRAPHER.

IN THE TELEGRAPHER of the 20th inst. I notice a long communication, signed by the clerks and messengers employed in the Western Union office, in this city entitled "A Caustic Reply to Don Coradon." Well, I must acknowledge the reply is somewhat caustic, and it doubtless required the combined gigantic intellect of the employees subscribing to produce it; and they doubtless supposed that, upon its publication, Don Coradon would be so effectually squelched as to trouble them, the Western Union Company and their Superintendent, Mr. Flanery, no further.

It would, no doubt, be a favor to the getters up of that formidable document (which it must have proved rather troublesome for you to find room for, crowded as the columns of the paper usually are with more important and interesting matter), who are evidently inexperienced in the concoction of contributions, to inform them that facts cannot be successfully controverted.

What I have stated in regard to the Cotton Exchange and Mr. Flanery's connection with it is the truth; and in his card Mr. Summers, for some reason to me unknown, has gone back upon his own statement, which was, literally, "That if the Western Union had not left they would have been put out."

The concoctors of that card are evidently young, and have the adolescent ambition of poetical expression. This is a disease that time and experience will cure, provided it does not strike too deep. Let them rest assured of one thing, and that is that Don Coradon cares as little for their puerile efforts in the journalistic field as he does for the insects which buzz about his ears. DON CORADON.

The Other Side of the Student Question.

SCHUYLKILL HAVEN, Pa., May 7th.

TO THE EDITOR OF THE TELEGRAPHER.

I NOTICE in the columns of THE TELEGRAPHER communications from a number of correspondents, who seem to take pleasure in "running" telegraphic students. Now, I would suggest that this is all wrong. Do these correspondents, and others who sympathize with them in their attacks upon us, forget that they were, of necessity, originally students, and for a time, at least, were classed with those whom they now so contemptuously characterize as "plugs?" Judging from the tone of their letters, we must suppose that some of them, at least, were such uncommonly smart children that they took hold of the key and became, by inspiration or instinct, at once first class operators.

I am truly sorry to see such a spirit manifested among telegraph operators. They seem to desire to monopolize the business for all future time; and, if they could be gratified, it would be impossible to increase and extend telegraphic facilities beyond the ability of those now in the business to man the lines and offices. They do not consider that in telegraphy, as in all other lines of business, monopolies are odious, and the effect of such a monopoly as they desire to establish would be ruinous.

It is a fact, that if a person is a good and efficient operator, situations can always be found. But every business has its malcontents, and telegraphy is not an exception to the general rule. More justice and liberality on the part of those who have progressed beyond the student and "plug" period of their telegraphic experience will harmonize affairs, and result in the advancement of the best interests of all concerned. JACK BROWN, Student.

An Old Foggy Law.—Telegraph Matters in Baltimore.—Justice to the Military Telegraph Operators.

BALTIMORE, May 7th.

TO THE EDITOR OF THE TELEGRAPHER.

I PROMISED you, some time ago, to advise you occasionally of telegraphic matters in Baltimore. I suppose you have fully given me up, as I have neglected you until this time.

The late Legislature having passed an Act compelling all foreign corporations doing business in the State to take out a license a few days preceding the first of May, each of the managers informed the public, through the daily papers, that a certain company, having duly incorporated themselves under the laws of the State, quoting act, code, &c., had leased the lines of certain other companies in this State, and business would be conducted accordingly. We now have the "Western Union Telegraph Company of Baltimore," A. Wilson, Jr., President; Franklin Telegraph Company, K. Duff, President; Pacific and Atlantic Telegraph Company, R. B. Pierson, President. The Gold and Stock, having at first been a local affair, have continued as such to the present time, and have thus economized on advertisements.

The Adams Express Company propose to contest the legality of the Act, which, to say the least, has too much old foggyism about it to suit the spirit of enterprise we had begun to hope had arisen in our midst.

The agent of the Gold and Stock Telegraph Company occasionally reports another instrument, or an extension of private line interests, which is hopeful for the final overthrow of the narrowmindedness of that portion of our community who induced the passage of the protective legislation.

The members of the old U. S. Military Telegraph are considerably interested in the efforts of Hon. Mr. Ritchie, M. C. from the fourth district of this State, to grant 160 acres of land to that class of our fraternity. It would be well for all who served as telegraph operators in any of the departments during the war, to hunt up their documents and prevail on their Congressman to put the bill through. That it is meritorious none can deny. I would like to hear of its success, although I was not one of 'em.

Why is the editor of the Journal not at liberty to explain in reference to the Stearns double transmitter? If you give it up, present my compliments and the item

to "Electron;" and, as I see he occasionally elucidates a problem in the *Scientific American*, he might help an inquirer by an article on the mystery. I noticed that paper (*S. A.*) has the wrong end of the matter. N^o.

Personals.

Mr. H. C. MARKS has accepted a position with the Western Union Telegraph Company at Salt Lake, Utah.

Mr. WILL CONNER, formerly of Detroit, Mich., has accepted a position on the night force of the W. U. Chicago, Ill., office.

Messrs. BARKER, LESLIE and STONE, operators in the Western Union, New Orleans, La., office, have resigned.

Mr. EDWARD MILLER, formerly of Hartford, Conn., has been appointed assistant operator in the Western Union Depot office at Stamford, Conn.

Mr. H. B. McCRAY has been appointed agent and operator for the Southern Minnesota Railway at Fountain, Minn.

Mr. W. T. BACKUS has been appointed circuit manager of the Western Union lines at Oil City, Pa., vice F. A. STUMM, removed; and Mr. G. ED. FOSTER manager of the Oil City, Pa., Western Union office in place of Mr. STUMM. The former announcement contemplated Mr. S. as manager only, whereas he filled both the positions above mentioned.

Mr. J. FRANK MORRISON has been appointed night chief operator in the Baltimore, Md., Western Union office.

Mr. J. E. NETHERLAND has been appointed night manager of the Louisville, Ky., Western Union office, vice T. J. CASSELL, relieved.

Mr. GUS. MEADE has resigned his position in the Pacific and Atlantic, Louisville, Ky., office, and accepted a position in the Cincinnati, O., Western Union office.

Mr. ED. R. OWEN has resigned his position in the Salem, Oregon, Western Union office, and has removed to Jacksonville, Jackson county, Oregon, to engage in other business.

The Telegraph.

By Cable.

CABLE TELEGRAPHS TARIFF.

LONDON, May 3.—In the House of Commons to-night Lord Lennox, member for Chichester, gave notice that he would make a motion for the appointment of a select committee to inquire into the practicability of reducing the existing rates for telegrams to India, the colonies and the United States, and of purchasing the existing cables.

MEXICAN HONORS TO PROF. MORSE.

CITY OF MEXICO, April 27, via HAVANA, May 6.—A telegraphic demonstration is proposed in honor of the memory of the late Prof. Morse.

American Enterprise in London.

We see, from the London *Inventors' Guardian* of April 7, that Mr. George B. Field, who is widely and honorably known here as the first President of the Gold and Stock Telegraph Company, has been quite successful in the first steps toward the inauguration of a like enterprise in London. The *Guardian* says:

"The memorandum of association here presents the outline of a most useful institution for collecting and diffusing prices current, etc., by telegraph in all parts of the kingdom. The company was registered 26th of March with a capital of £200,000, in shares of £10 each, for objects which are thus stated: 1. 'To erect, maintain and work, between the office of the company and any Stock or Commercial Exchange, in any city or town of the United Kingdom, and offices in the same city or town of any broker, share dealer, banker or merchant, or other person having business with or upon any such Stock and Commercial Exchange, wires and apparatus, for the purpose of transmitting to such persons, respectively, quotations of the prices of stocks, and shares and produce, arrivals or departures of shipping, or other business. 2. To erect, maintain and work telegraphs, and transmit telegrams in accordance with the terms of any license granted by Her Majesty's Postmaster-General, or other competent authority.'"

We have no doubt that this novel enterprise for London will prove as remunerative there as it has been here, under the direction of Mr. Field.

The British-Australian Telegraph Company.

THE list of stations established by the British-Australian Telegraph Company comprises 70 in South Australia, 79 in Victoria, 9 in Tasmania, 68 in New South Wales, 32 in Queensland. In Java and Sumatra 12 east of Samarang, 23 west of Samarang; and one, Weltevreden, in Batavia.

THE Atlantic and Pacific Company have opened an office in the Academy of Music, Brooklyn, for the use of the General Methodist Conference, which is now in session there.

Foreign Telegraphic Notes.

THE *Official Gazette* of Madrid publishes a decree granting a concession for laying two submarine telegraph cables, one from England and the other from Portugal, and ending at a point yet to be determined on the coast of Galicia, in Spain. A second decree annuls the concession for laying down a submarine cable from the Azores to the coast of Spain.

Notice has been received that the Great Northern Extension Telegraph Company's cable between Hong Kong and Shanghai, which was interrupted on the 6th inst., is again in working order. Messages for Shanghai and Japan can, therefore, be sent as usual, via Falmouth and the China Submarine Telegraph Company's lines.

It is asserted that the amalgamation of the various telegraph lines to Bombay it has been finally decided shall take place. The prices at which the various stocks are arranged will be as follows: Falmouth and Gibraltar, £12; Anglo-Mediterranean, £200; and the British-Indian, £12. This is an important step, and one certainly in the right direction for the special interests of shareholders.

Mr. F. S. Dutton, Agent General for South Australia of the Australian Overland Telegraphs, has received a telegram from the Government in Adelaide, which confirms the advices from Port Darwin heretofore published. Advices from Port Darwin say the gap is now only 200 miles, a horse estafette being organized, and the first batch of messages hourly expected. The telegram received on Wednesday was sent from Galle on the 16th April, on the arrival of the Australian mail of the 29th of March, and was as follows: "Todd at head of navigation, Roper, February 16. Magnificent river. Reports taking Omeo and other vessel 100 miles up the river, and landing stock all well, awaiting fine weather to proceed inland. Paterson with him, and retains command. He estimates, by this time, the gap to be 250 miles, and that wire will be in working order throughout by end of July—meantime he is organizing the horse express. Todd now probably at Port Darwin. Communicate, if necessary. Line this side working well. Light party left Attack creek with despatches for Todd on the 21st inst. We expect message from Todd daily."

The total number of messages forwarded from postal telegraph stations in the United Kingdom, during the week ended April 13th, 1872, was 279,205; an increase on the corresponding week of last year of 71,596.

At a conference held at Paris, at the Ministry of Foreign Affairs, April 13th, the representatives of France, Brazil, Italy and Portugal, at the request of Portugal, resolved to declare the concession to the European and South American Telegraph Company cancelled.

Gov. Rawson advocates the establishment of a Meteorological Observatory on the island of Barbadoes, so as to record and telegraph the approach and progress of hurricanes and storms.

The cable steamers *Dacia* and *International* were obliged to put back into the port of Kingston, Jamaica, in consequence of severe weather. The sea ran so high that it was found impossible to drop a "mark buoy" where the Panama cable was lost.

Telegraphic Brevities.

THE Siemens Universal Galvanometer is a great favorite in this country. Fifteen or twenty of them have been imported during the past two years, and are doing good service on our telegraph lines.

The Dominion Company have been setting cedar poles in Toronto thirty inches in diameter. These would come under the head of street obstructions in some places. We hope the company will last as long as those poles, which is saying a good deal.

There is a rumor about town that a new "Printer" has been invented. We have often wondered that some inventor did not turn his attention to this much neglected branch of the telegraphic art.

The May Magazines.

THE AMERICAN JOURNAL OF SCIENCE AND ARTS.

THE May number of this leading scientific monthly has an excellent and interesting table of contents. Electricians will be especially interested in Prof. TROWBRIDGE's article on the *Electro-motive Action of Liquids Separated by Membranes* and a contribution treating of the *Demagnetization of Electro-magnets*, by ROBERT W. WILLSON. The department of scientific intelligence is very full and complete, and brought down to the date of publication. Published monthly at New Haven, Conn., by Profs. DANA and SILLIMAN, at \$6 per year, single numbers 50c.

THE INDUSTRIAL MONTHLY.

The high standard adopted by the editors and publishers of this excellent monthly is well sustained by the May number. It contains numerous articles of value and interest to all engaged in industrial pursuits.

Its illustrations are numerous and beautifully executed, and no labor or expense is spared to make it worthy of general patronage, and creditable to all concerned in its publication. Issued by the Industrial Publication Company, 176 Broadway, at \$1 50 per year.

The American Artisan.

WE regret to learn that Mr. J. W. COOMBS, who has been one of the publishers of the *American Artisan* from its commencement, has been obliged to retire from active business on account of ill health. Mr. COOMBS' interest in the concern has been purchased by Mr. LEICESTER ALLEN, for the last few years associate editor of the *Scientific American*, who will hereafter assume the editorial management of the *Artisan*. Mr. HENRY T. BROWN, the senior partner of the late firm, will remain, as heretofore, in charge of the extensive patent agency business of the concern, which has been conducted by him with marked ability for many years. The new firm announce that many improvements are to be made in the *Artisan*, which we hope may secure to it a career of renewed prosperity and popularity.

To Train Despatchers.

Mr. W. W. WELLS, Superintendent of Telegraph and Train Despatcher of the St. Louis and Iron Mountain Railroad, has issued a circular to train despatchers, which is as follows:

"The question of a general system of 'train despatching' for the railroads of the United States is becoming a most important one, and I consider it to the advantage of all railroad companies, and those interested in their management, to cooperate in their efforts to call together a Convention of Chief Train Despatchers from all parts of the United States and Canada, for the general interchange of ideas, the establishment of the best and most uniform system of train despatching, and, if deemed desirable to form an association, to hold stated meetings, and the appointment of committees to report upon such business as may come before the Convention.

"I would, therefore, respectfully suggest the propriety of your consideration of this matter, and would be pleased to have views upon the same as soon as possible, in order to make the necessary arrangements for assembling the Convention at such point as may be decided upon."

The proposition of Mr. WELLS is one which should meet with encouragement. The subject is an exceedingly important one, and the interchange of ideas and plans would doubtless result in much good. We hope that the proposed Convention will be called, and that such an association as the one proposed may be the result of it.

New Patents.

For the week ending April 30, 1872, and each bearing that date.

No. 126,329.—PRINTING TELEGRAPH. George M. Phelps, Brooklyn, N. Y., assignor to Western Union Telegraph Company.

1. The adjustable governor, made with a centrifugal brake revolving within a conical shell, in combination with the revolving arm or arms *s s'* and range of finger keys, substantially as set forth.
2. The revolving arms *s s'*, driven by a frictional connection to the motor, in combination with the spring finger keys *t* and pulser *g*, substantially as and for the purposes set forth.
3. The pulser *g* and switch *21*, with their respective connections to the battery, line and ground, substantially as shown, in combination with the lever arm *u* and lever *v*, substantially as set forth.
4. The armature *m*, vibrating between two electro-magnets by the change of the polarity in the current, in combination with the lever *u* impelling pallets *n* and wheel *u* for moving the type-wheel, substantially as set forth.
5. The vibrating circuit closer *g*, actuated by the type-wheel lever *u*, in combination with the printing magnet and percussion impression roller, substantially as set forth.
6. The pulser *g*, made with the yielding circuit closers *12* and *14*, insulated from the circuit closers *11* and *15* and in contact with the spring *h*, in combination with the circuit closers *13* and *16* and connections, substantially as set forth.
7. The inclined dash *52* on the type-wheel for printing fractions, as set forth.
8. The pallet or pallets *f f'* and actuating wheel *f*, in combination with the pulser *g*, substantially as and for the purposes set forth.

No. 126,336.—PRINTING TELEGRAPH. George B. Scott, Brooklyn, N. Y., assignor to himself and A. G. Davis, Baltimore, Md.

1. The combination of the relay *K*, insulated circuit disk *G* connected by wires *g'* to the keys of the key-board—the disk and keys being in same closed circuit—circuit breaker *F*, escapement wheel *D* actuated by a weight or its equivalent, escapement lever *H I'*, and escapement magnet *I*, all arranged in relation to the main and local circuits, substantially as specified.
2. The combination of a circuit wheel and bank of keys, which are all in a closed circuit except the one which is for the moment depressed, the arrangement of said keys and the wires which connect them with the circuit wheel being substantially such as described, whereby the circuit is broken when the circuit breaker is midway between the projecting points or pins of the circuit wheel, for the purpose set forth.

No. 126,287.—ELECTRO-MAGNETIC ALARM. No. 126,288.—ELECTRO-MAGNETIC BURGULAR ALARM.

These are patents issued to William B. Guernsey, Jersey City, N. J., covering various devices for electrical alarm mechanism, the claims for which are too lengthy for the columns of THE TELEGRAPHER, and not of special importance to our readers.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS
OF THE
TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, MAY 11, 1872.

Increase of Telegraphs and Telegraph Business.

THE Telegraphs and telegraph business of this country, and of the world, are increasing annually and constantly in a ratio which must astonish those who are not familiar with the statistics. Day by day the telegraph is becoming a more essential element in business and social affairs, and is more generally and extensively used by all classes of people, especially in this country and the British American Provinces. We have not space to go fully into this matter, but have thought it might interest, and perhaps profit our readers, to submit some facts and reflections upon the subject.

The statistics which we publish from week to week of the increase of the business of the British Postal Telegraph, of the numerous submarine cable companies which centre in London, or have their headquarters there, and of the other European telegraphs, show the rapid progress and increase of the business in the Old World. In this country there are not equal facilities for obtaining complete and reliable statistics, but enough is available to show that we are progressing as fast or faster in this direction as our European neighbors. Such statistics of the Western Union Telegraph Company as are attainable, show the following increase in the number of miles of wire owned or operated by that company during the last six years. The total number was, for the years:

1866.....	75,686
1867.....	85,290
1868.....	97,594
1869.....	104,584
1870.....	112,191
1871.....	121,151

and the increase for the present year for that company will reach from 12,000 to 15,000 miles.

The receipts for that company, the year being reckoned from July to July, have been as follows:

1866-'67.....	\$6,568,925
1867-'68.....	7,400,000
1868-'69.....	7,316,960
1869-'70.....	7,138,737
1870-'71.....	7,637,448

There was a rearrangement and considerable net reduction of tariffs in 1869, which temporarily reduced the gross receipts, although there was a very large increase in the amount of business done.

The net revenue of the company over working expenses was as follows:

1866-'67.....	\$2,624,919
1867-'68.....	2,641,710
1868-'69.....	2,648,801
1869-'70.....	2,237,965
1870-'71.....	2,532,661

These expenses do not, of course, include the cost of construction or reconstruction, but there was a very considerable net revenue, which for the last three years has been applied, as it is stated, to the reduction of the capital, by the purchase and retirement of certain portions of the stock. Whether this stock has been cancelled, or is held in the treasury of the company subject to reissue, should the policy of the managers or the exigencies of the company require it, is not known.

It is understood that the receipts for the current fiscal year, which ends June 30th, have been very much larger than those of the previous year, and will aggregate between \$8,000,000 and \$8,500,000.

In certain localities, where competition has been very active, the rates have been reduced below a paying basis, and there has been an actual loss on such business. A different policy has been inaugurated, however, and, as was announced in THE TELEGRAPHER last week, by an agreement between the competing companies the rates have been increased to a rate which will afford a fair profit. This must have a beneficial effect in the future, and the suicidal policy of

"cutting rates" below a compensating basis has not been abandoned too soon.

We have not the full statistics of other companies at hand, but we know that they are all increasing their business and securing more favorable results. The statistics of the Franklin Telegraph Company, which we published last week, show that this company, which has heretofore been as little promising to the stockholders as any in the country, is earning a very respectable surplus the present year, and we hear of offers for its stock of \$27 per share, whereas a short time since it was unsaleable at any price. The Atlantic and Pacific Company is also doing a largely increased business, and extending its lines—and, as a matter of fact, we might go through nearly if not quite the whole list of telegraph companies and lines with similar results. This increase of the telegraph business is not of an abnormal or temporary character, but consequent upon the greater appreciation and accustomed use of telegraph facilities, and of the increase and expansion of the general business of the country. It must continue to grow and increase from year to year, with the growth of the country, and practically we can see no limit to either.

With proper and economical management there is no reason why telegraphy should not be a profitable business. The investment of more money in practical electrical and engineering talent would be an exceedingly profitable use of the money of the companies. An actual increased expenditure on construction and equipment would supply a better class of lines, and an improvement in insulation which could not but add largely to the capacity of the wires for business, and produce proportionably improved financial results.

Practical telegraphers are deeply interested in the steady, rapid and profitable increase of the business, as it has a direct and most important bearing on the question of compensation. If some means could be devised whereby a standard of efficiency and proficiency might be established, and situations and compensation graded accordingly, there would be much more inducement than there now is for persons of superior ability to engage in telegraphy, and perfect themselves in the theory and practice of the telegraphic art. It would seem as though a permanent continuance of the existing system—or rather want of system—in this respect must be impossible. To correct and reform it, however, it is necessary that there should be coöperation between telegraph employers and managers and telegraphic employees, for the best interests of all parties. Cannot some method be devised by which this can be secured?

A Good Opportunity.

THE attention of telegraph operators is called to the advertisement of Board in South Brooklyn. We are assured that this is a favorable opportunity for telegraphers to obtain first class accommodations and all the comforts and conveniences of a home.

Charges for Delivery of Messages.

WE hear much complaint of the excessive charges made for the delivery of messages from many of the smaller stations. It is no uncommon thing for the charge for personal delivery of despatches within a mile or two of an office to very largely exceed the price of transmission. This is a mistake on the part of the company or managers who authorize or permit it, as it greatly limits the business which otherwise would be done. There should be some rule in regard to this matter, so that in sending a message a person might know what the actual expense would be. It is proper that, where messages are required to be delivered at a distance by special messenger, a reasonable additional charge should be made, sufficient to compensate for the time and labor, but we submit that a charge of fifty cents to a dollar for a mile or two is too much.

Telegraph managers in the interest of their lines, if not of the public, should give this matter attention, and establish and enforce a rate of charges for such services, which, while it shall compensate the messengers employed, shall at the same time be just and reasonable to their patrons. We commend this subject to their immediate attention as one of importance, which has been too long neglected. In this city all charges for delivery have been abolished, on the ground that, as there are branch offices in all parts of the city,

the extra expense is compensated by the additional patronage secured. In localities where there are but one or two offices to serve a considerable extent of territory, this of course is not feasible, but the patrons of telegraph lines are entitled to be protected from excessive and unreasonable charges of this kind.

Justice to the United States Military Telegraph Operators.

OUR Baltimore correspondent, "Ne," calls attention to an Act introduced in Congress by the Hon. Mr. Richie, M. C. from the fourth Maryland District, granting 160 acres of public land to each telegraph operator who was in the United States Military Telegraph service during the late war. If any persons who were in the United States Military service during the war are entitled to recognition, and a grant of land from Congress, those who were in the telegraph service of the army should not be neglected or overlooked. Many of the telegraphers who were engaged in the military service were exposed to greater hardships and dangers than their associates in other departments, and performed services of incalculable value and importance. The safety of armies, and the success of the most important military operations frequently depended upon the courage and fidelity of the military telegraphers, and they were never found wanting in zeal or devotion to the national interests.

We should suppose that it would not require much labor or influence to secure the passage of this Act, but it would be well for telegraphers who were engaged in the service to bring such influence as they can to bear in its favor.

Retirement of Mr. J. D. Reid and Appointment of a New Editor of the Official Organ.

WITH the number of the *Journal of the Telegraph* for April 30 the connection therewith of Mr. J. D. REID, as its editor and manager, terminated. We congratulate Mr. REID upon his release from an irksome and disagreeable position, and extend to him our best wishes for his future happiness and prosperity in whatever department of life his labors and interests may be engaged.

Mr. FREDERICK J. GRACE, who is well and favorably known to the telegraphic fraternity, is announced as Mr. REID's successor, and has taken charge of the paper. He is a practical telegrapher, who has been actively engaged in telegraphy from his boyhood, an electrician and inventor of superior ability, a sincere and good writer, and will, no doubt, make the official organ as near a first class telegraphic newspaper as the executive officers of the company will permit. We welcome him to the editorial as heartily as, many years ago, we did to the telegraphic fraternity.

A Handsome Testimonial.

A NUMBER of employees of the Gold and Stock Telegraph Company, and other friends of Mr. E. A. CALAHAN, who has recently resigned his position as Superintendent of that company, have presented him with an elegant testimonial, in the form of a gold medal, bearing on one side a finely engraved representation of the stock reporting telegraph instrument, known as the "Calahan Printer," while the reverse side contains the following inscription:

"Presented to
EDWARD A. CALAHAN,
Inventor of the Stock Telegraph Instrument,
By employees of the Gold and Stock Co., and others,
April 23, 1872."

The committee of arrangements who had the matter in charge were Messrs. W. H. SAWYER, W. H. COLLINS and T. P. SCULLY, of the G. & S. Co. The medal is valued at \$75, and was executed in a most tasteful and creditable manner by Mr. W. A. HAYWARD, of 208 Broadway, N. Y.

Buell's Sounder.

THE small but handsomely finished sounder which is manufactured and sold by M. A. BUELL, of Cleveland, Ohio, is becoming very popular among operators all over the country, and a large number of them are being disposed of. Mr. BUELL has now increased his facilities for manufacturing, so that he can fill orders promptly. They are not only remarkably good sounders but cheap withal, being sent by express, C. O. D., for \$6, as per advertisement in another column. We have seen them and know them to be good.

OPERATORS, ATTENTION!**BOARD IN SOUTH BROOKLYN.**

First Class Accommodations for Four more Telegraph Operators. House new; brown stone front. Excellent neighborhood. Only six minutes' walk from South Ferry. Every room heated by a register. Bath, gas, and every comfort of a home.

Terms—\$8 to \$10 per week. Call at 140 President Street, Brooklyn.

WANTED,

A GOOD LINE MAN

IMMEDIATELY.

Address, stating terms, etc.,

I. W. COPELAND,

Supt. D. C. Telg. Co.,

Fishkill-on-Hudson.

R. S. WHITCOMB,

CHICAGO, ILL.,

DEALER IN TELEGRAPH POLES

keeps constantly on hand and for sale a full assortment of all lengths and sizes of TELEGRAPH POLES, and is prepared at all times to fill orders and make contracts for supplying Poles on the shortest notice.

Yard and Office on FISK STREET, near TWENTY-SECOND, Chicago, Ill.

CHARLES WILLIAMS, JR.,

(ESTABLISHED 1856.)

109 Court Street, Boston,

has for sale the various kinds of Office and Magnet Wires, including Cotton Covered, Silk, Gutta Serena, Painted, Fancy, and

DAY'S KERITE COVERED WIRE.

16,000 MILES

OF

"JOHNSON'S" WIRE

USED BY THE

TELEGRAPHS OF THE UNITED STATES

DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
MANCHESTER, ENGLAND.

Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

TELEGRAPH LINES

OF ANY LENGTH FULLY EQUIPPED WITH

WIRE, INSULATORS, BATTERIES,
INSTRUMENTS, ETC.

L. G. TILLOTSON & CO.,

No. 8 DEY STREET,

NEW YORK.

Sole Agents for "Johnson's" Wire.

" " " American Compound Wire.

" " " Cauvet's Patent Screw Insulators.

" " " Sam'l O. Bishop's Insulated Wires and Cables.

" " " Brooks' Patent Paraffin Insulators.

Manufacturers of every description of

TELEGRAPH APPARATUS.**AMERICAN FIRE ALARM AND
POLICE TELEGRAPH.****GAMEWELL & CO., Proprietors,**

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J. W. STOVER,

General Agent and Superintendent.

L. B. FIRMAN, Chicago, Ill.,

General Agent for the West and North West.

J. R. DOWELL, Richmond, Va.,

Special Agent for Virginia and North Carolina.

J. A. BRENNER, Augusta, Ga.,

Special Agent for Georgia and South Carolina.

L. M. MONROE, New Canaan, Conn.,

Special Agent for New England.

THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

Albany, N. Y.,
Alleghany, Pa.,
Boston, Mass.,
Bridgeport, Conn.,
Buffalo, N. Y.,
Baltimore, Md.,
Chicago, Ill.,
Cincinnati, Ohio,
Columbus, Ohio,
Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
Washington, D. C.,
Worcester, Mass.

The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

**FIRE ALARM
AND
POLICE TELEGRAPHS,**

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original FARMER & CHANNING PATENTS, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION of CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The co-operation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

CHARLES T. CHESTER,
104 Centre Street,
NEW YORK,
TELEGRAPH ENGINEER,
AND MANUFACTURER OF
INSTRUMENTS,
BATTERIES,
AND EVERY DESCRIPTION OF
TELEGRAPH SUPPLIES.

BUNNELL'S PATENT REPEATER.

These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

JONES' LOCK SWITCH-BOARD,

a most compact and reliable Switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

EXCLUSIVE AGENTS OF

A. G. DAY'S

KERITE,

OR

COMPOUND RUBBER COVERED WIRE.

SUBTERRANEAN & AERIAL WIRES,

OF THE

HIGHEST INSULATION.

We are now prepared to furnish, after an experience of three years, an Insulated Wire, which can be buried in the earth or exposed to rain and sun, or to the vapor of acids, without injury. Professor SILLIMAN, who has exposed it to the most destructive agencies, finds that it remains uninjured in an atmosphere of ozone, which would destroy gutta-percha in a few hours. It exceeds glass or any other known substance as a non-conductor.

We have made special arrangements to furnish this article for office purposes at a reduced rate.

ALSO, TO FURNISH

IRON CLAD CABLES,

of the usual size, with KERITE COVER, believing that it will exceed, in insulation for submarine purposes, ANYTHING HITHERTO MANUFACTURED.

We shall be happy to furnish estimates for any amount and size of cable, which will be found to compete with any other construction, both in quality and price.

We manufacture the Genuine ELECTROPOION BATTERY, with Patent Platina Connection, introduced by us eight years since; also, THE ALPHABETICAL OR DIAL TELEGRAPH, now extensively used in this and other cities for private lines, being easily and quickly learned by any one.

We offer for sale, among other novelties, a SOUNDER that will work practically with a single DANIELL cell, a BATTERY that does not require to be taken down but once a year, and the very best MAIN LINE SOUNDERS made.

Our CATALOGUE, embracing a large amount of new matter and description, is now ready for distribution.

A MERICAN COMPOUND TELEGRAPH LINE WIRE COPPER FOR CONDUCTIVITY. STEEL FOR STRENGTH.

The superiority of the COMPOUND TELEGRAPH WIRE compared with iron, consists in its LIGHTNESS, reducing by over fifty per cent. the number of poles and insulators required;

Relative TENSILE STRENGTH, homogeneity and elasticity—decreasing the liability to breakage from cold weather, sleet, etc.;

CONDUCTIVITY—insuring great improvement in the working of lines in any condition of the weather;

And in its DURABILITY, which greatly exceeds that of the best galvanized iron wire;

Altogether resulting in a very great reduction in the cost of maintaining and working telegraph lines, while, at the same time, insuring

EFFICIENCY AND RELIABILITY.

Address—

American Compound Telegraph Wire Co.,

ALANSON OARY, Treasurer,

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Agents in New York,

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M ODERN PRACTICE OF THE ELEC- TRIC TELEGRAPH.

A HAND-BOOK

FOR

ELECTRICIANS AND OPERATORS.

By FRANK L. POPE.

Fifth Edition, Revised and Enlarged by the addition of 40 pages of New Matter on

RECENT IMPROVEMENTS,

AND

FULLY ILLUSTRATED.

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50 Copies sent free by mail on receipt of price.

For sale in Canada by JAMES KEARNS,

Montreal Telegraph Office at Kingston.

W E INVITE THE ATTENTION OF RAILROAD COMPANIES, AND PROPRIETORS OF PRIVATE LINES, TO OUR

Magneto-Alphabetical DIAL TELEGRAPH INSTRUMENTS,

which are in use on the POLICE TELEGRAPH and many PRIVATE LINES in Boston and vicinity.

They require no Battery, and are always ready for use, thus avoiding the expense, trouble and uncertainty attending any Instruments to which Batteries are necessary. They are easily worked, having a straight Key-board, with a key for each letter and figure; are much more rapid than any Printers, and work well on LONG or SHORT lines.

They are the best Instruments for RAILROAD COMPANIES or PRIVATE LINES that have been produced—as Conductors, Engineers, Station Masters and others can telegraph by them rapidly in ROMAN LETTERS.

We also manufacture PRINTING TELEGRAPH INSTRUMENTS, which are the most CORRECT and RELIABLE in use.

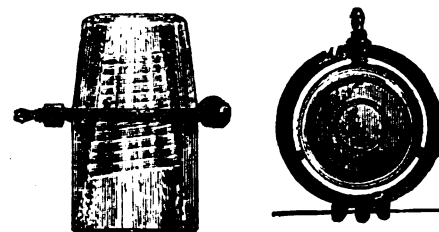
As the Type-wheel is adjusted instantly after printing each letter, no mistake can occur, except through the neglect of the operator, and they are as RAPID as any other SINGLE WIRE Printing Instruments in use.

GEORGE L. ANDERS & CO.,

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STEAM PRINTING HOUSE,
28, 30, 32 CENTRE STREET,
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EXECUTES ALL DESCRIPTIONS OF
BOOK, JOB AND COMMERCIAL PRINTING.
TELEGRAPH PRINTING A SPECIALTY.

C HESTER'S PATENT INSULATOR.



The undersigned solicits examination of some of the reasons which have induced him to recommend to his patrons and friends the Insulator exhibited above as the best and cheapest in use.

Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal.

As now manufactured, these insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

TELEGRAPH WIRE.

The attention of

Telegraph Companies, Superintendents and Line Builders is called to a

New Article of TELEGRAPH LINE WIRE

OF UNEQUALLED QUALITY AND UNIFORM EXCELLENCE.

While great care and attention has been given to Instruments and Insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European Governments, only fit for fencing purposes. Many tons of such material now remain here, utterly unsaleable and unfit for use.

The researches of the able electricians of Europe have resulted in establishing a standard of excellence for Telegraph Wire far exceeding that with which we have heretofore been satisfied.

We extract from the minute and specific details a few of the requirements of a

STANDARD GOVERNMENT WIRE.

1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch).

2d.—The wire to be highly annealed and very soft and pliable, and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be coiled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications a breaking strain of 1,360 pounds or No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

We now offer for sale this Uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market, to which this system of tests is uniformly applied.

We shall designate it by the Trade Mark,

CHESTER, A 1,

and our customers ordering it may be sure of receiving an article always uniform, and always the very best.

The capacity or endurance of No. 9 is 21 to 23 TWISTS UPON TWISTS in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

COMPARATIVE AND COMPETITIVE TESTS

with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 30. The omission of the elongating process would increase the flexibility and the tenacity.

Although the wire has been proved immeasurably superior to that commonly sold, its price will closely approximate to that of the inferior article.

CHARLES T. CHESTER,

104 Centre Street,

NEW YORK.

L. G. TILLOTSON & CO.,
 8 DEY STREET, NEW YORK,
 AND
BLISS, TILLOTSON & CO.,
 41 Third Avenue, Chicago, Ill.,
 GENERAL AGENTS FOR THE SALE OF
SUBMARINE TELEGRAPH CABLES
 AND
INSULATED WIRES,
 of various kinds, insulated with PURE GUTTA PERCHA,
 COTTON and SILK. Manufactured by

SAMUEL C. BISHOP,
 at the Manufacturers' prices. Sole Agency in the United States
 for the celebrated

GALVANIZED WIRES
 Manufactured by Messrs. RICHARD JOHNSON &
 NEPHEW, Manchester, England.

Long Lengths; Superior Quality; Low Prices.

SOLE AGENTS FOR THE
American Compound Telegraph Wire Co.,
 OF NEW YORK.

The superior quality of this Wire consists in its LIGHTNESS,
 STRENGTH, CONDUCTIVITY and DURABILITY; in all of which re-
 spects it greatly exceeds Galvanized Wire.

SOLE AGENTS FOR
BROOKS' IMPROVED
PATENT PARAFFINE INSULATORS.

A Stock of these Insulators always on hand.

MANUFACTURERS OF THE
Patent Screw Insulator and Brackets.
 MANUFACTURERS OF

JONES' PATENT LOCK SWITCH,
 For any number of Wires required.

PATENT RELAY MAGNETS,
 Of any resistance required.

PONY SOUNDERS, MAIN LINE SOUNDERS,
POCKET RELAYS, in Hard Rubber Cases,
PREMIUM REGISTERS, KEYS of all Styles,
LIGHTNING ARRESTERS, PLUG SWITCHES,
BATTERY MATERIAL, for Grove, Carbon, Daniell,
 Hill, Yeoman, Smee, and every other description
 of Battery in use. In short, the

LARGEST AND BEST VARIETY OF
TELEGRAPH MATERIAL
 Ever exhibited in this country.

We can at any time furnish and ship Equipment
 for an entire Line of 300 to 400 Miles within
 Twelve Hours after receipt of Order.

CHARLES WILLIAMS, JR.,
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 MANUFACTURER OF
TELEGRAPH INSTRUMENTS
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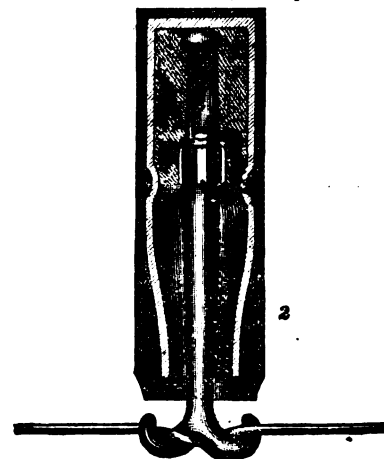
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The Telegrapher

A Journal of Electrical Progress.

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New York, Saturday, May 18, 1872.

Whole No. 305

[From the Report of the Massachusetts R. R. Commissioners.]

The Telegraph and Signal System of the New Jersey Railroad.

By F. L. POPE.

THE running of all trains on the main line of railroad between New York and Philadelphia is controlled by a series of safety signals, operated in connection with a telegraph line employed exclusively for this purpose.

The system is arranged, in general terms, as follows: Telegraphic signal stations are established along the line at distances apart corresponding to the shortest interval that is permitted by the regulations of the road between any two trains going in the same direction. The engineer of each train, upon passing one of these stations, is informed by means of the proper signal if the preceding train going in the same direction has passed the next signal station in advance. In the absence of a signal denoting that such is the case, the train is required to stop and receive explanations, and is either detained until the preceding one has been heard from, or else is allowed, by orders from the proper authority, to proceed on its way, using all necessary precaution, and expecting to overtake a disabled train.

On the New York and Philadelphia Railroad there are thirteen signal stations between the northern terminus of the road, at Jersey City, and New Brunswick, a distance of thirty-one miles. This portion of the road is, therefore, divided into fourteen sections, averaging but a little over two miles each. As a matter of fact, none of them are more than three miles.

The number of regular trains which leave Jersey City during each twenty-four hours is forty, and the number arriving is the same. Of these twenty run to and from New Brunswick and points beyond, and the remainder are local trains, for the accommodation of the citizens of Newark, Elizabeth, and other intermediate points. With a single exception none of these trains leave Jersey City at a less interval than ten minutes apart—this exception being a slow way train, leaving four minutes behind an express train.

Between New Brunswick and West Philadelphia, a distance of 58.25 miles, there are twelve signal stations, averaging about four and a half miles apart. There are on this portion of the road seventeen regular trains each way daily between New Brunswick and Trenton (twenty-six miles), and twenty-four between Trenton and Philadelphia.

In passing over certain portions of the road in the cities of New Brunswick, Elizabeth, Newark and Jersey City, the movements of the trains are not under the control of the safety signals. All engines or trains going in either direction are obliged by the regulations to run with caution at these places, so as under no circumstances to endanger a preceding train. These portions of the track are much occupied with branch trains, shifting engines, crossings of other roads, etc., which makes it necessary to except them from the general system.

The signal employed is a white board, or a white light at night, shown through an orifice two feet in diameter, in a black signal box, and placed in a conspicuous position at the side of, or directly over the track, so that it can be seen as far as possible. A partition within the box separates the signals for the opposite directions. A screen of red cloth covers the orifice in the box when the signal is in its normal position, concealing the white board by day, or coloring the light red by night. The safety signal is exhibited to an approaching train by the telegraphic operator, who pulls a cord attached to it and terminating in his office, which lifts the red screen and exhibits the white board or light. The moment the engine passes he lets go the cord, and the red screen again drops into its normal position by the action of gravity, concealing the white safety signal.

When within half a mile of a signal station each approaching train gives a long, loud whistle. On hearing this the operator at the station at once exhibits the white signal, providing that all preceding trains have passed the next station in advance, and he knows of no other obstruction.

If the white signal is not shown the train is stopped, in order to obtain information from the operator in re-

gard to preceding trains which have not passed the next station, or of any other obstruction.

In case the train is allowed by the train despatcher, or other authorized person, to proceed without the safety signal, and without knowing where the preceding train is, the engineer is required to look out carefully for obstructions, and keep his train perfectly under control till he reaches the next signal station.

When a train has passed a signal station the time of passing is at once reported back to the last station and forward to the next one in advance, as well as to the principal office at Trenton or Jersey City, as the case may be. No operator is permitted to report a train as passed unless he has seen the red flag or light at the rear of the train, in order to be sure that no cars have been uncoupled and left on the track in the way of a following train. When this does happen he reports the fact to headquarters, and the proper telegraphic instructions are issued to provide for the case.

Trains passing a signal station, and which have not come from nor passed the preceding station—for instance, when coming in from a branch road—are required to notify the operator of that fact, so that he will not report it back, and cause a risk of its being mistaken for another train, which may have passed the preceding station. When a train is to stop or leave the main line between two signal stations, it is required to report that fact to the last station it passes. In this case the operator does not show the white signal, but explains the circumstance to the next succeeding train.

Each operator is provided with a blank time card, ruled in two divisions, one for north bound and the other for south bound trains. Each division has five columns, in which he is required to set down respectively:

1. The designating or schedule number of each train passing.
2. The designating number of the locomotive.
3. The time the train passed the preceding station. (This is done when the report is received from that station before the arrival of the train.)
4. The time of passing the station.
5. The time of passing the next station in advance (as per subsequent telegraphic report).

By consulting this card the engineer or conductor of a train can inform himself of the proximity or movements of other trains.

A large blank time card, called the train sheet, is kept at the head office, and filled up from the telegraphic reports of the stations along the line by an operator constantly on duty. It thus serves as a complete record of the movements and actual position of every train on the road at all times. This sheet is also in two divisions, for north and south bound trains, respectively, and one horizontal ruled line is devoted to each train passing over the road. The sheet is ruled vertically in columns, showing—

1. Designating number of engine.
2. Schedule number of train.
3. Schedule time of leaving terminus.
4. Number of cars in the train.
5. Name of conductor.
6. Name of engineer.

The remaining columns have the names of the several stations in their consecutive order printed at the top, with distances, etc. These columns are filled up, as the train passes over the road, by setting down the actual time of passing each station, as reported by the operator at that station, in its appropriate column. The six columns first mentioned are written up when the train starts from the initial station. A separate sheet is, of course, required for each day's work.

The system of controlling trains by telegraph and signals, which has been described, does not dispense with nor supersede any of the precautions previously in use, or which are used on roads not provided with such a system. A train stopped or delayed on the main track is not permitted to depend upon the station signal to hold the succeeding train, but is required to send back a warning signal a once. Thus it would seem that only by the grossest negligence, or disobedience of positive orders on the part of two distinct persons, simultaneously, is any collision liable to take place. This system is immeasurably preferable to the one in use on many roads, especially in New England, in which a danger signal is merely displayed for a given number of minutes after the passage of each train.

This is not sufficient to insure absolute safety. The attendant may neglect to make the signal; the engineer may fail to observe it; and, even if made and observed, and the proper time has elapsed, the preceding train may have broken down, or stopped on the road for some cause, and, in the confusion attending the accident, no warning may be sent back; or, if sent back, may not be seen by the engineer of the following train.

On the New York and Philadelphia Railroad two operators, one for day and one for night service, are employed at each signal station, and are paid at the average rate of about \$40 per month. At many of the less important stations these operators also officiate as station agents or ticket sellers.

Two telegraph wires are required to operate this system—one of them being continuous throughout the length of the route, and used by all stations for reporting trains to headquarters, and for the general business of the road, and the other used exclusively for working the signals, and divided up into separate sections, of such length as circumstances may render expedient, embracing from three to six signal stations in one circuit.

The expense of constructing a line of telegraph poles with two wires, suitable for this service, is about \$175 per mile, and the telegraphic apparatus, signal and fixtures at the stations, cost about \$200 each. The cost of operating it, of course, varies according to circumstances; but, beyond the amount paid for wages of operators, is very trifling.

It will be noticed that on this road safety signals are relied on to control trains, and not danger signals. In other words, where there is any liability to interruption or obstruction, such as drawbridges, crossings at grades, etc., the thing is presumed to be wrong until the engineer has positive evidence that it is right. If, on the contrary, a danger signal is relied on; and if, either from defect in the apparatus or negligence on the part of the signal man or engineer, or if from fog, smoke or any other cause, the danger signal, if made, is not seen, the result may be a terrible disaster. When a safety signal is depended upon, then if it is not made, or not seen, the most serious result that it will follow is an unnecessary stoppage of the train.

Thus, in the terrible disaster at the Norwalk draw-bridge, many years ago, if the train had been required to stop when no signal was shown indicating that the bridge was right, no harm would have been done; but the engineer, depending upon a signal that the bridge was open, which he failed to see, ran into the river with his train.

The credit of devising and introducing the system above described is mainly due to Mr. Ashbel Welch, General President and Chief Engineer of the United Railroads of New Jersey, and many of the considerations above given were embodied in the report of a committee on safety signals and regulations some two or three years since, of which he was chairman. For controlling the movements of trains upon an important double track road, it would seem difficult to devise a system which combines convenience and safety in a greater degree than the one under consideration.

The Nonpareil Telegraph.

THE application of the telegraph to the various uses to which it is adapted, and to which it will ultimately be applied, is in its infancy. As the simple principle upon which it works, its cheapness, and the ease and facility with which a knowledge of the telegraphic alphabet may be acquired become known, its use will become more general, and adapted to a great variety of purposes. The Nonpareil Telegraph will tend in a great measure to forward this result. Its cheapness places it within the reach of all, and its capacity is ample to work lines of any length not exceeding five miles.

A line connects our dwelling and office, to which a pair of Nonpareil sounders are attached, and our ten-year-old boy, after a month's practice, sends and receives messages with considerable accuracy and facility. The wire also extends to the house of a neighbor, and every morning the apparatus is in constant use by a dozen or more pupils of those who have already acquired a knowledge of the rudiments of telegraphy. It has proven to be a never-failing source of amusement to old and young alike—a convenience that any-

body acquainted with its merits will not willingly be without—and a means of profit, in familiarizing "the rising generation" with a knowledge of an interesting scientific subject.

Its general introduction in all the minor details of business requiring speedy communication, is but a question of time, and the demand for those skilled in the manipulation of instruments affords an inducement for the acquisition of such knowledge. We will cheerfully give any information relating to the cost of these instruments, and the firm supplying them, upon application personally or by letter.—*The Washington Standard*, Olympia, W. T.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Congress and the Telegraph.

WASHINGTON, D. C., May 15.

TO THE EDITOR OF THE TELEGRAPHER.

THE attention of both Houses of Congress has been devoted to the tariff, the treaty with England, which has come so near to nullification, and which is yet not out of danger, and to President making, so exclusively as to preclude the consideration of telegraphic matters. The weather is also becoming decidedly too warm for comfort, and members of Congress are exceedingly anxious to get away, so that no definite or important action is to be expected on anything connected with the telegraph.

The House Committee on Appropriations, after a number of hearings, some of the more important of which have been reported in THE TELEGRAPHER, have decided to report the Hubbard Postal Telegraph Bill favorably to the House. It is understood that Mr. Palmer, who introduced the bill in the House, and who has had it in charge, will, on the first opportunity, report it from the committee, and hopes to get it in some time next week. It will then go on the calendar, and go over until the next session.

The Hubbard party are quite elated at this preliminary victory, but have still a great deal of hard work and earnest opposition to overcome before they can hope to succeed. Notwithstanding the favorable action of the committee, the project will meet with determined opposition, and I do not believe that it can eventually pass—certainly not at this Congress—and with a new Congress the work will mainly have to be done over again. The objections to the bill are greater than there would be to a Government telegraph system pure and simple. It has all the defects, and is open to all the objections to the postal telegraph project of the Postmaster-General, except that it does not, at the outset, necessitate the investment of so much money from the United States Treasury. It only postpones this investment, however, for nobody doubts that the Government would be compelled eventually, and at no distant day, to take possession of and pay for the lines.

CAPITOL.

New Version of "Beautiful Snow."—Good Place to leave Lunch Baskets.—Painful Experience of an ex-Superintendent.

OGDEN, UTAH, May 4.

TO THE EDITOR OF THE TELEGRAPHER.

THE majority of telegraphers employed by the Desert Telegraph Company of Utah are young ladies, of whom one of the most beautiful and accomplished, a Miss Snow, is employed by that Company in Ogden. An operator of the A. and P. office here, becoming desperately smitten, gave vent to his feelings in the following effusion, which appears in *The Ogden Junction*:

BEAUTIFUL SNOW.

No ho beautiful Snow
not on the hill but in the Valley below
not made of Gold and Chilly Sleet
to freeze the wanderers weary feet
Or Melting in the Summer days
when Saul pours forth his hottest Rays

Oh Oh beautiful Snow
thou dost haunt me where e'er I go
in my walks and in my dreams
thou art Near and ever Seen
when the thunders deafening Roar
or the whirl winds Passing O'er
and the Lightnings Vivid FLASHES
Streams forth in perfect AVALANCHE
tis then I think of THEE
and wonder if from harm you're free
and if You've Some protecting Arm
to Shield You from the worlds Cold Storm

Oh Oh beautiful Snow
while journeying here On earth below
when On the land Or On the Sea
Ill Dream—Ill Think Ill—talk of Thee G A F

The editor of *The Ogden Junction*, commenting on the above, says: "The above is *verbalim et literatim* as it came to us. We do not know who G. A. F. is, but judging by his ho's should think he must be the original Hogaf, about whom we have heard occasionally. This effusion is a specimen of the 'hard lines' with which editors are afflicted. The writer is evidently Snow-blind, and is perhaps more to be pitied

than blamed; and, as the Snow of his raptures is out of his reach, we suggest a little ice cream instead; he can get it at Kelson's, Foote's or Kiesel's saloons."

About two weeks ago Mr. E. O. Waite, late Superintendent of the A. and P. Telegraph Company, at Chicago, passed through the "Land of Saints," on his way to California. Before leaving Chicago, being somewhat anxious in regard to snow blockades on the U. P. R. R., he secured a basket capable of concealing a Falstaff, and placed therein many good things with which to replenish the "inner man" while journeying through a country where all things eatable are somewhat mysterious. Arriving at Ogden, and being anxious to visit Salt Lake City, and not wishing to be encumbered with the basket, he left it in this office. New, curiosity, especially so far as it may benefit the stomach, forms quite an item in the organization of some of the operators here, and no sooner had Mr. W. left than the "artists" went for that basket, and well they complimented the owner on his ideas of living. Next day the gentleman returned—was astonished at the weight of the "Waite" lunch, remarking that certain persons were surely not extraordinarily well fed by the "natives," and should "waite" until they were invited—then went on his way a wiser and etc., etc. * * * Two or three days subsequently an "artist," who must have had a hand in the affair, wishing to amuse his San Francisco friends over the line, told "S. F." how the luncheon was demolished. "S. F." answered, "Ha! ha! it's I, Waite, at key!"

GENTLE.

N. B.—Parties travelling west may now leave their lunch baskets here with perfect safety.

New Systems of Telegraphy.

NEW YORK, May 7.

TO THE EDITOR OF THE TELEGRAPHER.

MORE than fifteen years ago Prof. Hughes clearly illustrated, in a practical way, the feasibility of telegraphing between two stations, hundreds of miles apart, from both ends of a wire—both by the Morse and the Hughes (printing) systems—and it has been known to all who take any interest in telegraphy that this method of telegraphing has been in successful operation on the Franklin Co.'s Boston line for at least three or four years past, and with the most perfect success.

It was natural to expect that the very respectable antiquarians of the *Scientific American* and the *Official Journal of the Telegraph* would, in the course of human events, become aware of what the whole telegraph world has known for fifteen or twenty years past, and it is very amusing to witness the air of mystery and tones of exultation in which the editors of those journals announce the impending revolution in telegraphy, which, they intimate, has been inaugurated by the adoption of this old and well known principle in telegraphic science by the Western Union Telegraph Co.

The impression which the Western Union Co. is so industriously cultivating, that the system of writing from both ends of a wire at the same time doubles the facilities of that Company for serving the public, is perfectly characteristic of the managers of the would-be monopoly, but it is a well known fact that the average gain is at most not over 25 to 50 per cent. one day with another, and this is obtained at the expense of four instead of two operators. The system is also very objectionable, because of the difficulty of using "repeaters," without which it can only be worked on short circuits, and cannot be employed at more than two offices on any one line. It has other quite serious disadvantages, as compared with the regular Morse system—so serious, indeed, that whilst the system has been well understood for more than fifteen years by all intelligent telegraphers, it has been introduced only to a very limited extent.

We may reasonably expect that the managers of the Western Union Co., some fifteen or twenty years hence, should they or their Company exist that long, will take up and become enthusiastic over the subject of Automatic or Fast Telegraphy, which, let me say, offers the only new hope of any material advance in the science of telegraphy. When it is well known that 1,000 or even 1,500 words per minute may be reliably transmitted and recorded over very long lines of wire by the automatic system, and that the advantages are equal to 75 or 80 per cent. over the Morse or any other system yet known to the public, what is the use of spending breath or ink in a vain effort to bolster up old worn out systems of telegraphy?

The President of the Western Union Co. has publicly asserted, before the Congressional Committee, that his wires and operators were capable of telegraphing upon an average only about 600 words per hour. Conceding to him a gain, by the Stearns system, of 50 or even 100 per cent., does he hope to compete with the automatic system, which telegraphs 60 to 90,000 words per hour over a single wire? ANTI-HUMBUG.

Disgraceful to the Country.

TO THE EDITOR OF THE TELEGRAPHER.

In your issue of April 27th is a Washington letter which says: " * * * He [Hubbard, Gardiner G.] then referred to the precedence given to commercial news [O. N. D.] reports on the wires. He did not say it was not right, but merely wished to show that a certain class of business is now given preference every

day. The [his] bill proposes to legalize what is now contrary to law. * * * "

Such are the sentiments of this Hubbard.

It makes my blood tingle to think that members of the House of Representatives have so far lost all dignity as to permit such an expression, without rebuke so strong as to prevent in future the repetition of such an insult.

This matter of turning over the telegraph to the United States Government is OUR business, too—the business of the operators and all telegraphic employes, and is more OUR business than that of anybody else.

If representatives have so little idea of justice and propriety as to listen to a man who coolly says that the practice of telegraph companies of ignoring their charters is something of which he can say "I do not say it is not right," then I say we need not expect that our interests will be even thought of by the projectors, or by those who may act as executors.

If representatives of the people of the United States can tolerate a proposition to legalize the open contravention by corporations of State charters—which charters are the very foundations upon which the whole business stands—if wholesale law breaking is to be permitted, yea, legalized; if the laws are to have no binding effect, simply because they have been continuously and systematically evaded; if law is no law except when it is obeyed, then do we stand deservedly in the contempt of all mankind.

Further on, in this letter from Washington, R. B. Lines, formerly an operator and now a Government employe, is reported to have said: " * * * he knew that the scheme of a Government telegraph, advocated in the President's message, was favored by a majority of the practical operators of the country * * * "

I do not believe he knew any such thing; and I do not believe any man knows this; but if every practical operator were a subscriber, we could soon find out by taking a vote, and I have my opinion as to the result of the vote. So far as I know, first class operators are intensely opposed to the scheme.

A Repairer Wanted to do Repairs on the Telegrapher.

TO THE EDITOR OF THE TELEGRAPHER.

THERE is a cross, an insulator off, and a break in the wires at the top of this journal. There is also some slack.

It is manifestly improper to pick so many flaws with the W. U. lines when the very quintessence of trouble is in your own, and has been in ever since you put up this set of wires. You cannot be much crowded on this route. Beyond the cross one wire is gone, no doubt doing duty in some gravery by this time. Another thing, you use pin-glass on one pole and hook on the other. I thought you had a preference for Brooks' and that you were down on glass, and here you are flying glass at the mast-head. On closer examination I find some more bad features in this short section of what ought to be a first class job.

Before I can conscientiously advise any more to make themselves subscribers you must put your strings in better shape or back out, and say it's only a burlesque. But I am opposed to jokes myself, and would prefer that you overhaul this business and give us a Morse rig, with a battery set on three-legged stools at least.

I got "fits" once for not knowing better than to set my cells on the floor—and I was only a messenger; yet, here are you two big lubbers—you, Pope and Ashley—got two main batteries in that position.

And right smack in the face of all this, in big letters, we read, "A Journal of Electrical Progress."

MESILF.

The American System of Train Despatching.

MICHIGAN, March 28.

TO THE EDITOR OF THE TELEGRAPHER.

THE communications of your several correspondents, *pro and con*, on the American system of train despatching, have been read with much interest and carefully considered, and upon the whole I believe that the *best, safest*, and most reliable system is that adopted and used on the Flint and Pere Marquette Railroad, in this State. This road has a telegraph superintendent who is also train despatcher, and, when moved by telegraph, all train orders originate with him.

The following will illustrate this system, and, it is believed, demonstrate its advantages:

B is the first telegraph station south of the despatching office, and the headquarters of the road. We will suppose that No. 8 north is behind time, and No. 11 south is about due at B, and No. 8 north is coming—the train despatcher sends an order to the agent at B to "hold No. 11 south until arrival of No. 8 north, 31." Agent sends his "32," and receives "O K" twice and the despatcher's signature. No. 11, on arriving at B on time, after waiting five minutes, would then have "the right of track." No. 8 is coming to B, hence the order.

Or, No. 8 north has not yet arrived at Pine R., and the work train is at Birch R., and asks for orders to run to Pine R., and an order is sent to the agent at P. R. to hold No. 8 north at P. R. until arrival of work train south. This order, and all orders are repeated with a 32, and receive the "O K" twice and signature of despatcher.

Here is another illustration:

No. 6 (passenger) north is due at E. S. at 12.50 P. M.,

and No. 5 (passenger) south leaves E. S. at 2.30 P. M. No. 6 is late, and arrives at B. at 2.25 P. M. It cannot proceed without an order, and the train despatcher sends the following:

E. S.
To _____ conductor, and engineer of No. 6 north at B. Run to S. regardless of No. 5 south, 31.
Sig.

A copy is given to the conductor, and read to or by the engineer, and they proceed; in the meantime No. 5 south is held until the arrival of No. 6. The following is a copy of "Train Order Blank":

"F. AND P. M. RAILWAY TRAIN ORDER."

This order is not valid until it is signed by the receiving operator, and by him endorsed upon the back with the train despatcher's "O K," in response to the understanding of "32" message of the person addressed. The conductor must see before starting that this order is read aloud to or by the engineer, and fully understood by him.

"By telegraph from E _____ S _____ to _____ conductor and _____ engineer, _____ train — at _____ station.
(Signed), _____ Train Despatcher.
"Rec'd at _____ M., by _____ Operator.

Notice.—The above order gives no rights to the train receiving it, except as plainly specified therein. In no case does an order against one train give any rights against any other train. Wild trains must keep clear of the time of all regular trains, except as stated in their orders.

"Return all orders to the end of the journey."

_____ Supt."

This order is signed by the R. R. Superintendent. I do not know of an accident that has occurred by a misunderstanding of an order, or from an order given to any conductor that was incorrect, since I have been connected with this road. It may be because our officers are superior and experienced men, and that our worthy train despatcher is an ever careful, accurate operator, and one who is alive to everything, if he is green.
VOX POPULI.

Personals.

Mr. BENSON, of the Chicago, Ill., Pacific and Atlantic day force, has accepted a position on the night force of the Western Union office, same city.

Mr. J. J. POWERS, of the Western Union day force, Chicago, Ill., has resigned, and fills the vacancy in the Pacific and Atlantic Chicago office occasioned by the resignation of Mr. BENSON.

Mr. WILLIAM WALLACE, an old and well known telegrapher, who has been out of the business for nearly a year past, has accepted a situation on the night force of the Western Union, Chicago, Ill., office.

Mr. WILLIAM MILLS, of the Western Union Chicago, Ill., night force, has accepted a position with the same company at Detroit, Mich.

Mr. THOMAS CURRY, of the Western Union night force at Chicago, Ill., has gone to New Orleans, La., to take a position in the Pacific and Atlantic office there.

Messrs. BERRY and STEVENSON, of the Western Union night force at Chicago, Ill., have been transferred to the day force.

Mr. J. C. DORCHESTER has resigned his position on the Western Union night force at Chicago, Ill., in order to devote his time and attention exclusively to the practice of medicine.

Mr. FRANK MERRILL has resigned his position in the Western Union, Chicago, Ill., office.

Mr. DAVY, formerly of Pittsburg, Pa., has accepted a position on the Western Union, Chicago, Ill., night force.

Mr. F. D. BOWEN, of California, has accepted a position on the Western Union night force at Chicago, Ill.

Mr. J. M. KEMP, formerly on the line from the American Bridge Co.'s office on Wabash avenue, Chicago, Ill., to their works at South Chicago, which has been closed, has accepted a position on the Western Union, Chicago, night force, and Mr. ENSLOW, of the Wabash avenue office of the same line, has gone into other business.

Mr. N. C. GRISWOLD has resigned his position on the Western Union, Chicago, Ill., day force.

Mr. C. H. LURN, formerly operator at Quakertown, Pa., N. P. R. R., has accepted the position of agent and operator at North Wales, Pa.

Mr. S. S. GARWOOD has been appointed Superintendent of the Mississippi Division of the Pacific and Atlantic Telegraph Company, with headquarters at Chicago, Ill.

Mr. EDDIE DENNIS, of Indianapolis, Ind., has accepted a position in the Pacific and Atlantic, Wabash avenue, Chicago, Ill., office.

Mr. ROBERT G. BROWN has resigned his position with the Automatic Telegraph Company in this city, and will hereafter be engaged with his father, Mr. ROBERT BROWN, in the business of contracting for and constructing telegraph lines.

Mr. CHAS. H. COSGRAVE has been appointed superintendent of telegraph and train despatcher of West Wisconsin Railway Co., with headquarters at Hudson, Wis. This is a good and well merited appointment.

Mr. L. LEE MORRIS has been appointed station agent and operator at Stillwater, Minn., on the St. Paul and Taylor Falls R. R.

Mr. HENRY C. HOPE, of Freeport, Ill., has been appointed manager of Minneapolis, Minn., office, on the Pacific and Atlantic lines.

Mr. WILLIAM G. PURDY, former manager P. and A. Telegraph office at Minneapolis, has resigned, and accepted a position as station agent and operator on Cedar Rapids, Dubuque and Minn. R. R., at Lansing, Iowa.

Mr. CHARLES S. H. SMALL, for the past two years chief night operator on the Western wires, in the main office of the Western Union Telegraph Company in this city, has resigned, and accepted an assistant superintendency with the Gold and Stock Telegraph Company.

Mr. W. J. COOK has resigned his position in the New Orleans, La., office of the Pacific and Atlantic Company, and accepted a situation in the Memphis, Tenn., Western Union office.

Mr. GEORGE E. SCOTT has been appointed Chief Constructor of the Stock Instrument Department of the Gold and Stock Telegraph Company.

The Telegraph.

By Cable.

LONDON, May 9.—The Great Western Telegraph Company, which intends laying a telegraph cable from New York to England by way of Bermuda, has paid the Messrs. Hooper, who are manufacturing their cable, the first instalment of £100,000.

The Gold and Stock Telegraph Company.

Mr. GEORGE B. SCOTT has been appointed Superintendent of the Gold and Stock Telegraph Company and Mr. C. H. S. Small Assistant Superintendent of the same company. These are both good appointments, and reflect credit not only upon the appointees but also upon General Lefferts, the President and executive officer of this company.

Foreign Telegraphic Notes.

THE overland telegraph, in connection with the Australian cable, will probably be opened in three months.

The total number of messages forwarded from postal telegraph stations in the United Kingdom during the week ended April 20th, 1872, was 275,349—an increase over the corresponding week of last year of 60,050.

Mr. Andrews, the manager and secretary of the Indo-European Telegraph Company, has sent to the London Times a return of times at which messages from India were, during April, received in London by the lines of his company, via Teheran. Mr. Andrews adds that all messages for India, and the East generally, should be marked "via Teheran," for which words no charge is made. The messages are received in London at an hour apparently earlier than that of their despatch from Calcutta. The sun cannot help being beaten on time, but rival companies are not to be outdone in this manner. Therefore, like the other "lion on Africa's burning shore," Mr. W. T. Ansell, superintendent of the Falmouth, Gibraltar and Malta Telegraph Company, follows suit with a similar list, from which it appears that the actual time occupied in transmission ranged from 53 minutes to 5 hours and 11 minutes, averaging about two hours and a half. All messages for India, China, and the East generally, intended to go by the Falmouth, Gibraltar and Malta Telegraph Company's lines should, Mr. Ansell states, be marked "via Falmouth."

The brig Venture, from Demerara, which arrived at Halifax, N. S., last week, picked up adrift in the Gulf stream a buoy, attached to which were 700 fathoms of chain and about 500 fathoms of telegraph cable. The buoy and attachment doubtless belong to the company laying the cables to connect the West India islands.

Extraordinary meetings have been called of the Anglo-Mediterranean, British-Indian Submarine, Falmouth, Gibraltar and Malta, and Marseilles, Algiers and Malta Telegraph Companies, to take into consideration terms of amalgamation, which have been already agreed to by the directors. It is proposed to issue to the stock and shareholders of the four companies fully paid shares of £10 each in a new company, to be formed by a consolidation of the four undertakings, in exchange for their shares and stock, in the following proportions, viz: For each £100 nominal amount of such shares or stock in the Anglo-Mediterranean Company, £200; Falmouth, £120; Marseilles, £100; and British Indian Submarine, £120. These relative proportions are based upon a computation of the present receipts and an estimate of the prospects of the several concerns. The share capital of the new company required for the above distribution will be £3,397,000, but it is intended to fix the nominal capital at £3,800,000, as further sums may hereafter be required for extensions. The reserve fund, amounting together to about £70,000, will form the basis of the reserve fund of the amalgamated undertaking.

Mr. John Hough has been appointed chairman of the Great Western Telegraph (cable) Company.

The submarine telegraph cable between Lowestoft and Nordeney, which was broken on Sunday, April 21st, has been repaired, and the Indo-European Company's through special route with India, via Teheran, is reestablished and working as usual.

Telegraphic Brevities.

SINCE the recent political convention at Cincinnati, Ohio, the Western Union Telegraph Co. have been using Stearns' duplex instruments between that city and Chicago, Ill.; they are also used on a circuit between Chicago, Ill., and New York, making two in successful operation in the Chicago office.

The West Wisconsin Railway Telegraph Company has formed a working connection with the Pacific and Atlantic Telegraph Co. at St. Paul, Minn.

The Gold and Stock Telegraph Company are making progress in Chicago, Ill. They have about sixty instruments in operation, and have orders for nearly forty additional instruments yet to be filled. This company has bought out and now owns the Metropolitan City Telegraph Company, of Chicago.

Between April 24 and May 4 the Western Union Telegraph Company sent 531,511 words from Cincinnati relative to the Convention there.

The largest day's work ever done by the Western Union Telegraph Company was accomplished May 2d—80,000 words being received at Chicago, Ill., from Cincinnati, Ohio, alone. One operator, Mr. William Wallace, received at the wonderfully rapid rate of 41 words per minute.

New Patents.

For the week ending April 30, 1872, and bearing that date.

No. 126,290.—TELEGRAPH. William B. Guernsey, Jersey City, N. J.

1. An automatic unison stop, arranged to operate substantially as herein set forth.
2. Unison stops, controlled by automatic pole changers, substantially as herein set forth.
3. The toothed wheel T, having an interdenial space and a detent, t, and employed in combination with the detent lever L and magnet M, substantially as and for the purposes set forth.
4. The circuit breaking or reversing cylinders 1, 2, 3, 4, constructed to operate substantially as set forth.
5. The printing apparatus, consisting of a type wheel, a platen, an electro-magnetic circuit, and the mechanical connections for actuating the platen and the paper feeding devices, substantially as herein described.
6. The key V, actuated by a magnet, W, substantially as and for the purposes described.
7. A two station printing or visual telegraph, with balanced batteries and independent power driven instruments, automatically brought to unison at each revolution of their type wheels, and so constructed as to actuate the signaling and unison apparatus by means of a single magnet at each instrument.

For the week ending May 7, 1872, and each bearing that date.

No. 126,486.—ELECTRIC TELEGRAPH APPARATUS. Frank L. Pope, Elizabeth, N. J.

The combination of the helix H, angular bar I and armature J, arranged substantially as described, with the lever or bar K and sounding posts L and M, the whole combined, arranged and operated substantially as and for the purpose hereinbefore set forth.

No. 126,506.—CLUTCH FOR TELEGRAPH TRANSMITTING AND PAPER FEEDING APPARATUS. Gustavus C. Weismann, Brooklyn, N. Y.

1. The combination of one or more clutches, constructed substantially as described, with the lever B and drum F, the whole combined, arranged and operated substantially as herein specified.
2. The combination of one or more clutches, constructed substantially as specified, with the shaft that actuates the transmitter or circuit breaker of a telegraphic instrument, combined, arranged and operated substantially in the manner and for the purpose specified.

Born.

MANNING.—May 11th, 1872, to WILLIAM A. MANNING, of the Western Union Telegraph office, Cleveland, Ohio, a son.

Married.

NELSON—CARMICHAEL.—At Clifton, Ontario, on Wednesday, May 1st, 1872, Mr. HUGH NELSON, Assistant Superintendent of the Dominion Telegraph Company, to KATE, youngest daughter of Robert Carmichael, Sen., Esq., of Alton, Scotland.

Obituary.

OSCAR JENNINGS, of the Western Union, Chicago, Ill., night force, died April 24th, 1872, aged twenty-six years and five months. The action of his associates upon the occasion was published in the TELEGRAPHER for May 4th, but it is proper that some further notice should be taken of the sad event, which has deprived us of an esteemed and beloved associate.

His remains were escorted to Rose Hill by a delegation of the Odd Fellows (of which fraternity he was a member) and a committee from the night force of operators in the Chicago Western Union office, on the 25th ult., and was buried on the following day at Racine, Wis., by the Odd Fellows, in the Jennings Burial Lot.

Mr. Jennings was born at East Troy, Wis. He graduated from the commercial department of Racine College, and engaged in telegraphy at Racine, where he learned the art. He was subsequently employed in the Western Union Board of Trade office in this city, and was highly esteemed by his employers, and all the officers and members of the Board of Trade, for his courtesy, promptness and efficiency. He was naturally quiet and unassuming, and made many true, warm hearted friends.

He came to Chicago the second time only about five months ago, and accepted a situation on the night force of the Western Union main office, having previously resigned his position in the Board of Trade office and returned to Racine, so as to be nearer his home.

He leaves a wife and beautiful little son to mourn his loss, who have the heartfelt sympathy of all who knew their departed husband and father in their severe affliction.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS
OF THE
TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, MAY 18, 1872.

Back Numbers Wanted.

We are very much obliged to the friends who kindly responded to our request for copies of No. 289 of THE TELEGRAPHER, some weeks ago. Our supply is again exhausted, and those who do not preserve their numbers for binding will oblige us very much if they will overhaul their back numbers, and if they have this one send it to us. We would also be under obligation for a few copies of Nos. 288 and 290.

Increase of Demand for and Manufacture of Telegraph Apparatus.

We last week submitted some statements relative to the rapid increase of telegraphs and of the telegraph business. An inevitable consequence of the expansion of the business is an enormous increase in the demand for and manufacture of telegraph apparatus and instruments. Within the last five years the demand has severely taxed the ability of manufacturers to supply the required apparatus. It is but a comparatively short time since a few shops, working mostly by hand power, and with a limited number of hands, were able to meet the demand. At the present time the advertising columns of THE TELEGRAPHER show to some extent the change which has taken place in this respect. Year by year the old shops are enlarged; steam power has been generally introduced, and the competition for skilled workmen becomes greater. Besides the concerns that advertise there are a number of shops devoted to specialties, and which do not compete for general business, in which a very large amount of work is done. The Western Union shop in this city, under the management of Mr. GEO. M. PHELPS, was fully described in THE TELEGRAPHER of Nov. 25th last, with a statement of the amount of certain descriptions of work produced—but this, as was stated in the article, does not give any adequate idea of the amount of work actually done in this model establishment. Great as is its capacity, it has been found inadequate to the requirements of the company, and they have recently purchased the south half of the building adjoining the United States bonded warehouse on Church street, between Cedar and Rector streets, to which its works are to be removed, and where room is offered for a material enlargement and increase of capacity of production. They have also a branch shop at Louisville, Ky., but this does not in any way compare with the establishment under Mr. PHELPS' superintendence. The shop at Ottawa, Ill., formerly owned and operated by the company, has been sold to GRAY & BARTON, of Chicago, Ill., and it is intended to concentrate, as far as practicable, all the manufacturing at the New York establishment. The Montreal Telegraph Company also has an establishment in Canada, at Montreal, we believe, where a portion of the work for that company is done. Notwithstanding the facilities of these companies for manufacturing, they are large purchasers of telegraph apparatus and materials from private manufacturers, and withal find it sometimes difficult to promptly supply their constantly increasing requirements.

Besides these there are large manufactories at Newark, N. J., engaged in specialties, which are crowded with work and unable to fill orders promptly, even with the aid of the most extensive and elaborate labor saving machinery. The Automatic Telegraph Company has a large shop at Newark, which appears to be fully equipped, and where the novel apparatus intended to be used by that company is made.

Any of our readers who have had occasion, during the last two or three years, to get electrical apparatus

made, will have fully realized in the delay experienced the crowded condition of these telegraph shops, and that the supply of this description of labor is not equal to the demand. In fact, the leading manufacturers have orders which will occupy them for months to come, and the pressure upon them seems to increase rather than diminish, notwithstanding they are constantly increasing their facilities and introducing new machinery, to enable them to turn out work more rapidly.

The reason for this will be found not only in the increase and expansion of the regular commercial telegraph lines, but in the application of the telegraph to new uses and purposes, requiring instruments specially adapted thereto, and often of more elaborate character and construction than the ordinary Morse apparatus. The Gold and Stock Telegraph Company of this city has already more than 1,200 instruments for reporting and private lines in use, and is increasing the number as fast as additional instruments can be manufactured. Other companies and individuals are putting in large numbers of printers for private lines; the American District Telegraph Company has already several hundred instruments in operation, and bids fair to require thousands of them; the railroads are year by year increasing the use of the telegraph in the operation of their lines, and are absorbing great quantities of telegraph apparatus for their special purposes. The Fire Alarm Telegraph, and the Burglar Alarms operated by electricity, also furnish a large amount of work, and keep several shops busy in producing their specialties.

We might go on at length specifying and enumerating the different kinds of work which are so greatly taxing the resources of telegraph and electrical apparatus manufacturers, but the above will suffice. In addition, however, it should be stated that the demand of inventors for the manufacture of experimental instruments is no inconsiderable element to be taken into consideration, and some shops are almost entirely devoted to this branch of the business, and all of them have more or less of it to do.

There is no reason to suppose that this demand will diminish for years to come. The natural wear and tear of such an enormous quantity of apparatus will furnish employment for much of the present manufacturing facilities, and as the country develops the new and additional demand must steadily increase. New applications of electricity and the telegraph are constantly being made, and we can as yet see no limit to this development.

Taking all things into consideration we do not believe that manufacturers of electrical and telegraphic apparatus need to fear any immediate or prospective decrease in the demand for their productions, and those who have well equipped shops are to be congratulated upon their good fortune in investing in a profitable and expanding branch of industry.

The Automatic Telegraph Company.

THE Automatic Telegraph Company have fitted up an operating room in the upper story of No. 64 Broadway, and a receiving office in the basement of the same building. It is stated that this company will, in a few days, open for business between this city and Washington, D. C., and practically demonstrate what can be accomplished by this system. The managers of the company are confident of the vast superiority of the automatic over all other telegraph systems, and that they will be able eventually to supersede them, through its vastly increased capacity for the transmission and delivery of despatches. This is certainly the only method by which the sceptics can be convinced, and rival telegraph companies brought to a realizing sense of the insecurity and unprofitableness of their investments.

We shall note the progress of the enterprise in THE TELEGRAPHER, and report truthfully, and without prejudice either way, its success or failure to accomplish the "great expectations" of the gentlemen who have it in charge.

Support Your Organ.

We would remind the telegraphic fraternity of the necessity for continued exertion in support of the only organ of the telegraphic fraternity in this country or the world, THE TELEGRAPHER. During the summer

months there is more necessity for special exertion on the part of the friends of the paper to maintain its subscription list than at other times, as business is the less active, and other matters engross the attention of telegraphers. Thus far the interest manifested in the paper since the present volume commenced has been very encouraging, and much greater than for the two years preceding. We desire to see this interest sustained, and, if possible, increased. We try to do our part to maintain an organ which shall be beneficial and creditable to the fraternity, and rely upon them to aid us by their subscriptions and contributions in so doing. We could at any time make such disposition of the paper as would be much more advantageous to ourselves personally, but we desire to keep it what it was intended to be when established, and what it always has been, an independent organ of the practical telegraphers of the country. We, therefore, ask all telegraphers who sympathize with us in this matter, not only to send us their own subscriptions but also to use their personal influence and exertions to secure the addition to our list of the names of their professional associates. The larger our subscription list is, and the more liberal the support rendered to us, the better and more influential will the THE TELEGRAPHER be.

Our New Office.

We are at last comfortably settled in our new office at 194 Fulton street, and will be pleased to welcome our friends and the fraternity generally who may favor us with a call. We are only one block west of Broadway, and visitors will not, as heretofore, have to climb three flights of stairs to reach our sanctum, where they may always be assured of a hearty welcome.

A Good Appointment.

Mr. THOMAS G. KENNEDY has been appointed night chief operator of the Western Union main office in this city, *vice* Mr. C. H. S. SMALL, resigned. Mr. KENNEDY is well known as an expert telegrapher and accomplished gentleman. This is a good appointment and deserved promotion.

Correction.

In noticing an instance of rapid telegraphing from Chicago, Ill., to San Francisco, Cal., under the head of "Telegraphic Brevities," in the issue for April 20th last, the name of the operator was erroneously printed G. MERVILL. It should have been G. MERRILL. "Honor to whom honor is due."

Miscellaneous.

NEW METHOD OF COPYING.—A novel method of rapidly and economically copying manuscripts and designs, whether produced by hand or photography, has been invented and patented in England by M. Eugenio de Zuocator. An ordinary letter copying press is used for printing from the design, which is formed upon a varnished metal plate. This plate, which is of iron, is either coated with a shellac varnish, and the writing or design to be copied then traced thereon with a metal point, or it may be coated with gelatin and bichromate, and the design produced by means of photography with a transparent positive. In any case the lines are formed of bare metal upon a surface of varnish. To the bed of the copying press is connected one wire of an electric battery, and to the upper plate of the instrument the other, so that when the press is screwed down, and the top and bottom plates come into contact, an electric current passes.

The varnished metal plate, upon which a memorandum has been scratched or otherwise produced, is covered with a few sheets of copying paper, wetted with an acid solution of prussiate of potash, and then screwed into the press. As before stated, the characters or design upon the varnished plate are formed of bare metal, and in these parts, of course, an electric current is set up; this action permits of the union of the iron with the potash, and the consequence is that prussiate of iron, or Prussian blue, is formed in lines corresponding to those upon the varnished plate. Copies thus produced in blue ink may be printed at the rate of one hundred per hour.

PAINE HEARD FROM.—An Illinois genius organized a company for experimenting upon water as an illuminating and culinary agent. After considerable money had been paid in, officers elected, etc., the inventor remarked that, in order to make water burn, it would have to be evaporated by twelve gallons of oil to two of water—an announcement which at once destroyed the enthusiasm and broke up the company.

The great defect of over-house telegraphs is in their insulation.—Culley.

OPERATORS, ATTENTION!**BOARD IN SOUTH BROOKLYN.**

First Class Accommodations for Four more Telegraph Operators. House new; brown stone front. Excellent neighborhood. Only six minutes' walk from South Ferry. Every room heated by a register. Bath, gas, and every comfort of a home.

Terms—\$8 to \$10 per week. Call at 140 President Street, Brooklyn.

THE RAILROAD GAZETTE.

TELEGRAPHERS will take a special interest in the discussion now carried on in the

RAILROAD GAZETTE

concerning the AMERICAN SYSTEM OF TRAIN DESPATCHING. The GAZETTE gives the fullest information in all departments of Railroad, and all the Railroad news.

It is an illustrated paper of 24 quarto pages—about the size of *Harpers' Weekly*.

PRICE, - - - - \$4 A YEAR.

Subscriptions will be received for three months at One Dollar.

R. S. WHITCOMB,

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DEALER IN TELEGRAPH POLES

keeps constantly on hand and for sale a full assortment of all lengths and sizes of TELEGRAPH POLES, and is prepared at all times to fill orders and make contracts for supplying Poles on the shortest notice.

Yard and Office on FISK STREET, near TWENTY-SECOND, Chicago, Ill.

CHARLES WILLIAMS, JR.,

(ESTABLISHED 1856.)

109 Court Street, Boston,

has for sale the various kinds of Office and Magnet Wires, including Cotton Covered, Silk, Gutta Serena, Painted, Fancy, and

DAY'S KERITE COVERED WIRE.

16,000 MILES

OF

"JOHNSON'S" WIRE

USED BY THE

TELEGRAPHS OF THE UNITED STATES

DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
MANCHESTER, ENGLAND.

Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

TELEGRAPH LINES

OF ANY LENGTH FULLY EQUIPPED WITH

WIRE, INSULATORS, BATTERIES,
INSTRUMENTS, ETC.

L. G. TILLOTSON & CO.,

No. 8 DEY STREET,

NEW YORK.

Sole Agents for "Johnson's" Wire.

" " " American Compound Wire.

" " " Cauvet's Patent Screw Insulators.

" " " Sam'l O. Bishop's Insulated Wires and Cables.

" " " Brooks' Patent Paraffin Insulators.

Manufacturers of every description of

TELEGRAPH APPARATUS.

**AMERICAN FIRE ALARM AND
POLICE TELEGRAPH.**

GAMEWELL & CO., Proprietors,

104 CENTRE STREET, NEW YORK.

J. W. STOVER,

General Agent and Superintendent.

L. B. FIRMAN, Chicago, Ill.,

General Agent for the West and North West.

J. B. DOWELL, Richmond, Va.,

Special Agent for Virginia and North Carolina.

J. A. BRENNER, Augusta, Ga.,

Special Agent for Georgia and South Carolina.

L. M. MONROE, New Canaan, Conn.,

Special Agent for New England.

THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

Albany, N. Y.,
Allegany, Pa.,
Boston, Mass.,
Bridgeport, Conn.,
Buffalo, N. Y.,
Baltimore, Md.,
Chicago, Ill.,
Cincinnati, Ohio,
Columbus, Ohio,
Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
Washington, D. C.,
Worcester, Mass.

The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

**FIRE ALARM
AND
POLICE TELEGRAPHS,**

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original FARMER & CHANNING PATENTS, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

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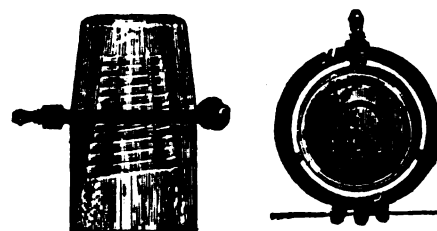
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Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal.

As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

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While great care and attention has been given to Instruments and Insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European Governments, only fit for fencing purposes. Many tons of such material now remain here, utterly unsaleable and unfit for use.

The researches of the able electricians of Europe have resulted in establishing a standard of excellence for Telegraph Wire far exceeding that with which we have heretofore been satisfied.

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1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable, and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .006 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being satisfactorily tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be coiled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications a breaking strain of 1,200 pounds or No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

We now offer for sale this Uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market, to which this system of tests is uniformly applied.

We shall designate it by the Trade Mark,

CHESTER, A 1,

and our customers ordering it may be sure of receiving an article always uniform, and always the very best.

The capacity or endurance of No. 9 is 21 to 23 turns upon itself in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

COMPARATIVE AND COMPETITIVE TESTS

with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 29. The omission of the elongating process would increase the flexibility and the tenacity.

Although the wire has been proved IMMENSELY SUPERIOR to that commonly sold, its price will closely approximate to that of the inferior article.

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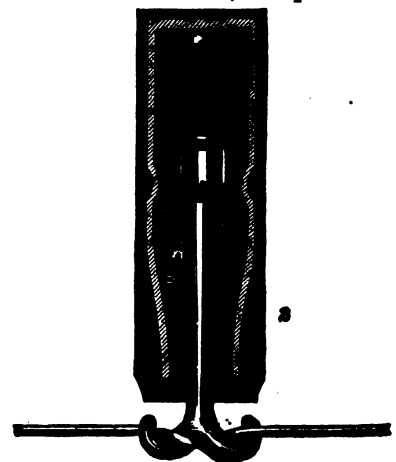
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SIEMENS BROTHERS.

The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 40.

New York, Saturday, May 25, 1872.

Whole No. 306

Telegraphy without Insulation. Means of Cheapening International Communication.

On Wednesday last Mr. H. Highton read a paper on this subject at the meeting of the Society of Arts. He gave an account of the experiments which he had tried, both on long lengths of naked submerged wire and on artificial cables, and the conclusions which he drew from them. He showed by experiment that water itself is for electricity of low tension so perfect an insulator that a long wire on a plate of copper charged with electricity of low tension will retain the charge even for hours—indeed, quite as obstinately as the glass of a Leyden jar retains a charge of high tension. The instrument he proposed to use for submarine telegraphy is a light slip of gold leaf, weighing from 1-500th to 1-200th part of a grain, acted on by a powerful electric magnet, and with its motions optically magnified. The delicacy of this is so great that, simply looking at a thermopile will transmit a visible signal through the resistance of the Atlantic Cable, and a kiss or grasp of the hand a very strong signal; so that a modern Pyramis and Thisbe might exchange salutations, not through a hole in the wall, but through the breadth of all the waves of the Atlantic. The use of this instrument gives an opportunity of using electricity of the very lowest tension, which, besides its other advantages, has a much less tendency to escape by faults in the wire. It was shown that a fault which caused the disappearance of all visible signals through Thomson's Speaking Galvanometer, with a resistance of 500 units, or about 125 miles of the Atlantic Cable, would still allow intelligible signals to be transmitted on this instrument with 10,000 units, or 2,500 miles of resistance. The other advantages were the absence of all swing, such as there is in a needle, and an instantaneous movement, in spite of electro-static induction. Where it requires two or three seconds for the wire to accumulate sufficient charge to overcome the initial friction in any instrument where there is any friction, however slight, which he proceeds to move at intervals of seconds by jumps, the gold leaf having no friction begins to move instantaneously, and proceeds by an equable motion. Again, where increased sensitiveness is required, the only thing necessary is to increase the force of the electro-magnet at the receiving end. The conclusion the author drew from his experiments was, that instead of the hundreds of thousands of units of insulation of the present cables, it would be quite feasible to work through a cable having only a single unit of insulation; or, if greater insulation were desirable, a wire might be used presenting much more resistance to the currents—such as a steel wire possessing more strength and cheaper than copper, and that electro-static induction, being less injurious, much cheaper, with less gutta-serena, cables might be used costing some fifth or sixth of the present prices, and that thus telegraphy might be made much cheaper and more available for hundreds of thousands of poor emigrants, instead of being the luxury of rich merchants, or speculators, or government officials. £50 a mile ought to provide a wire sufficient for all purposes of any required length.—*The Mechanics' Magazine.*

Electrical Potential.

BY PROFESSOR J. D. EVERETT.

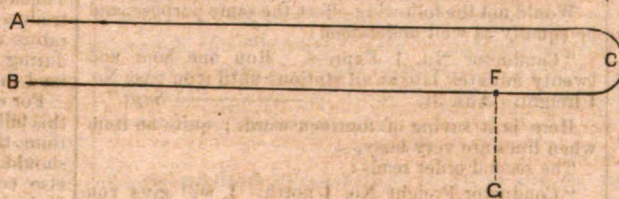
ELECTRICAL reasonings are, in many cases, greatly facilitated by employing the conception denoted by the name electrical potential. It may be defined as follows: There is electrical force at a point in the air, if an electrified particle placed there would experience force tending to move it in virtue of electrical attraction or repulsion; there is electrical force at a point in a conductor when electricity flows through the point; a conductor is said to be in electrical equilibrium when there is no electrical force at any part of it—in other words, when it is completely free from currents of electricity. Potential essentially depends upon forces (whether attractive or repulsive) mutually exerted upon each other by particles at a distance, and has been advantageously employed in the theories of gravitation and magnetism as well as of electricity. We shall at present confine our attention to electrical po-

tential. All the space in the neighborhood of electrified bodies is, in a certain sense, pervaded by their influence. This influence is completely specified by stating the numerical value, with proper sign, of electrical potential, at the different points of the space. Electrical potential never changes its value, per saltum, in passing from one point to the next. Moreover, if it is constant in value throughout any finite portion of a space not containing electricity, it is constant throughout the whole of this space. When electrical potential is constant throughout a given space, there is no electrical force in that space; and conversely, if there be an absence of electrical force in a given space, the potential throughout that space must be uniform. These propositions apply to the whole substance of a solid conductor, and to the whole space enclosed within the outer surface of a hollow conductor. Whenever a conductor is in electrical equilibrium it has the same potential throughout the whole of its substance, and also through any completely enclosed hollows which it may contain. When a conductor is not in electrical equilibrium currents set in tending to restore equilibrium, and the direction of such currents is always from places of higher to places of lower potential. In like manner, when a small positively electrified body experiences electrical force tending to move it, the direction of this force is from higher to lower potential. When flow of electricity is compared with flow of heat, potential is the analogue of temperature. Heat flows from places of higher to places of lower temperature.

The precise direction of the force exerted upon a positively electrified particle (or upon an element of positive electricity), when brought to a place where potential has not a constant value from point to point, is the direction in which potential diminishes most rapidly—a negatively electrified particle (or an element of negative electricity), which potential increases most rapidly. We here use the words *increase* and *decrease* in the algebraical sense.—*The Mechanics' Magazine.*

Formula for Faults and Defective Ground Wires.

THE following formula for locating faults, or for testing defective ground wires, may be of interest to the readers of THE TELEGRAPHER:



Connect the faulty wire in a loop with a good wire running parallel at C, the next station beyond the fault. Take the resistance of the metallic loop from A to B. Call this *a*.

Next with B open and ground at A. Call this *b*.

Finally, with A open and ground at B. Call this *c*.

Then $\frac{a(b-c)}{2} = x$ = the distance from B to F, regardless of the resistance of the fault.

For testing the condition of a ground wire make the same measurements as above.

Then $\frac{b+(c-a)}{2}$ = the resistance of the ground wire.

C. H. HASKINS.

Here We are Again!—A Railroad Train Propelled by Electricity.

A RECENT number of the Nashville (Tenn.) *Banner* contains the following: "The committee of scientific gentlemen appointed by the Board of Managers of the Nashville Industrial Exposition to consult with the inventor of the lightning railroad, made the following report to the Board on Friday evening. The report has caused considerable debate, and was extensively talked about yesterday in the city. With a view to satisfy the generally expressed anxiety on the part of the public, we visited the inventor, who very cour-

teously exhibited to us his model of the railway car, and, as far as he could, without compromising his interest at the patent office, the electric engine and the way in which he applied it to propel the cars. It is a very simple arrangement, and the only wonder to us is that the discovery has not been made before. The engine is composed of a number of magnets, so as to obtain a motive power of eight hundred and fifty pounds, or a one horse power. The armature is made to work similar to the pitman of a sewing machine, and takes the place of the piston of a steam engine. This works by breaking and closing the circuit—by the manipulation of a short, easy working lever, worked easily by the fingers of the hand, and so fast that the movement at either extremity is imperceptible to the eye, but makes it appear as a solid piece, like a red hot rod or burning stick appears if moved rapidly by the hand—a beautiful phenomenon often indulged in by children. This armature rapidly turns a driving wheel similar to that upon Hoe's printing presses, by which an additional power is obtained by its momentum, and this works the wheels under the car, which propels it at a very rapid rate. The road being elevated upon a single row of poles, it is as level as a die, and the cars are consequently moved with the greatest ease. The engine working as fast as lightning the cars can be driven at a tremendous rate of speed. We should think one hundred miles per hour could be easily made, but they can be driven as slow as desired.

"The inventor designed his invention to be used in carrying mails and express packages, which can be easily done at the rate of one hundred miles per hour, but the electro-magnetism, as a motive power for small machinery, will make the invention more useful and important. The model exhibited to us shows the road upon poles set in the curbstone or edge of the pavement, with a safe and easy stairway to ascend or descend from the cars. The single line of poles supports a double track for cars to run in opposite directions, the telegraphic lines of the different companies, and of the fire alarm telegraph and gas lamps to light the street. It is made very light, so that it will not obstruct the street but add to its beauty, and do away with the old fashioned tramway street cars, the dread of owners of vehicles and the impediment of commercial intercourse in all cities. The cars will run noiselessly, and are the very thing needed upon all crowded thoroughfares.

"Mr. Wm. D. Gentry, the author of this wonderful invention, is the manager of the Pacific and Atlantic Telegraph office in this city; has been a practical telegraph operator for twenty-five years, and is one of the oldest operators now living. He has devoted eight years to the development of this invention, and we hope he will now reap the reward of his labors. A working model, large enough to carry passengers or freight, will soon be put into practical operation."

Gramme's Continuous Current Magneto-Electric Machine.

IN all the magneto-electric machines hitherto constructed only an approximation to a continuous current has been arrived at, and this has been done only by making each machine a compound one, and having several armatures so arranged that, by driving the armature or armatures at a very high velocity, so that the interval between the cessation of one current and the commencement of the next became inappreciable. A recent number of the London *Mechanics' Magazine* contains an illustration and description of a new machine of this kind, invented by a Mr. Gramme, by which a continuous current is evolved, whether the apparatus is turned rapidly or slowly. It consists of a permanent horseshoe magnet, between the poles of which turns an iron ring with an insulated wire wound around it in one continuous length. The inner bends of the turns of this wire are connected with a row of studs, from which the current is taken off by metallic wheels which come in contact with them, and thus a continuous current is kept up as long as the wheel is kept rotating. By the use of thick or thin wire the helices may be made to give either a quantity or intensity current, as may be required. The electromotive force of the current is directly proportional to

the rate of rotation of the coils—that is, when the rotation is not extremely rapid—for the demagnetization of the iron requires a certain time. The machine, from its great simplicity, seems likely to have an extended use for such purposes as electrotyping, the electric light, etc.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Congress and the Telegraph.

WASHINGTON, D. C., May 22.

TO THE EDITOR OF THE TELEGRAPHER.

BOTH Houses of Congress have been too much occupied with more important business since my last letter to pay much attention to telegraph matters. In the Senate, however, on Saturday evening last, the Hubbard Postal Telegraph Bill was taken up and its discussion commenced, but, as usual, it lapsed into a tirade against the supposed shortcomings and iniquities of the Associated Press. The Senate reporter of the Associated Press was pretty roughly handled by Mr. Roscoe Conkling, of New York, who thought that, in the telegraphic reports of the proceedings, his numerous and sometimes lengthy speeches had not been given sufficient prominence. Notwithstanding this supposed grievance, with which properly the telegraph companies have nothing to do, Mr. Conkling forcibly opposed the bill as proposing an extraordinary scheme, and expressed his surprise at a matter of such importance being brought up at an evening session without previous notice, and when so many Senators were absent. He charged that the proposed reductions in rates were fallacious. The bill was also opposed by Senator Nye and others. Messrs. Hamlin and Sawyer advocated the measure as wise and necessary, and calculated not only to lighten the burdens of the people, but also to facilitate the operations of the Government.

Finally, the Senate adjourned without acting on the bill, and business is so much behind in that body that it is doubtful whether it will be reached again during the present session.

The House has passed the Senate resolution for a final adjournment May 29th, but the session will probably be prolonged until June 3d, and possibly to the 5th. It is hardly probable that the House will consent to sit beyond the latter date in any event, and it can, if it sees fit, force an adjournment on the 29th inst.

Political and sanitary reasons combine to induce members of Congress to desire to get away from this locality at as early a day as practicable, and we may be sure that the consideration of any telegraphic matters will not be permitted to delay their departure an hour.

CAPITOL.

A Blast Against the Postal Telegraph.

TO THE EDITOR OF THE TELEGRAPHER.

YOUR Washington correspondent is a capital institution (no pun), and I am thankful there is such a fellow. He keeps us posted on the disgraceful job known as the postal telegraph scheme, so that we may at least look at the snake which is preparing to bite us. There is some consolation in it that we are posted up as to how we are going to be sucked in. There is a fascination and keen delight at approaching danger. We all enjoy it so long as we feel we are master of the situation; but there is a fable about the tortoise and the hare; and, moreover, boats have gone over Niagara Falls which were fully under control; boys have played with edge tools long enough to get cut, and men have frequently fooled with the bear and the tiger until it was too late.

Gentlemen, this is a serious business. We must arise in our might and say to these men at Washington, "Behold! this is our profession; beware how you lay hands upon it."

"The people of the United States, not the paupers nor the rich, but the PEOPLE would march to your chambers and tear you to pieces did they know what is in your hearts when you advocate this measure. You would legalize those infractions of charter which give the people good grounds for demanding a reform of the telegraph. You would deliberately fasten upon the country by enactment those unlawful doings of the telegraph companies which alone are the cause of the deep and all-pervading prejudice against the present system."

"Instead of honoring your forefathers by upholding the doctrine of equality in all civil pursuits, you would establish by law the priority of the rich over the less rich. You would say to the wealthy, 'Since you have gathered much money in this our land of liberty and justice, because you have been sharper than other men, now do we appoint you a dominion over all who have less than you, and your station over them shall be in proportion as you have more money than they. And lo! we will perpetuate your sovereignty by giving money priority over all that is not money so much as you are; and we will shortly pass a bill which shall give priority in the places of worship, that God may see who are the mighty right of our land, and you will only have to show a card at the door with

two good endorsers thereon, and which card shall state how much you owe to having been brought up in the land of liberty and equality, and the usher shall show you to a pew marked like unto the figures upon your card."

"In all other public places you have been provided for. But the greatest and best thing which we shall do for you is to give into your hands the nerves of the entire commerce. You shall sit in your elegant offices throughout the land and shall say, one to another, 'Now have we at last the greatest of all boons. Now can we control throughout the States all that which can be bought or sold for money. Now is our perpetual reign secure. Every industry and every production will we manipulate, as Morphy did the chess men, and we will always win, as we have many times more than the inside track, for we have likewise the mare and the money which makes the mare go, and we do not see what there is that is good which we have not got.'"

But this *must* not be and it *shall* not be. Beware how you tamper with the rights of freemen! Ten million men are ever ready to lay down their lives whenever they become convinced that their liberty is slipping away.

Train Despatching and Abuse of the Telegraph.

ST. ANTHONY, MINN., March 23.

TO THE EDITOR OF THE TELEGRAPHER.

AN article appears in THE TELEGRAPHER of March 16th, over the signature of "Eastern Railway," exemplifying the system of train despatching on the railway upon which the writer is employed, and asking the West for a better system. In my opinion a better system than that known as the American system, one more safe, simple and reliable, cannot be devised. With certain modifications, more can be accomplished than by that of "Eastern Railway," or any other yet made known. This proposed modification, which it is my purpose to explain and illustrate in this communication, is intended to remedy a very patent difficulty and abuse of the telegraph arising from the excessive and practically unnecessary and useless amount of telegraphing involved in the telegraphic movement of trains. At least one third of the railroad telegraphing on American railroads is superfluous and uncalled for, and in this assertion I think most railroad telegraph operators will sustain me. This is a serious matter, especially upon lines crowded with business, and more especially those which are used for commercial as well as railroad purposes. In many cases the most important business has to give precedence to that which could be done by letter as well, or give way to superfluous business for which there is no need.

The consideration of useless or superfluous railroad telegraphing naturally brings us to the article of "Eastern Railway." The writer illustrates the system of American train despatching very plainly, but I think his examples may be improved by dispensing with the many uncalled for words used in the examples he gives us. In order to demonstrate fully and satisfactorily the point which it is desired to make, it will be necessary to reprint his examples. His first order reads thus:

"Conductor Express No. 1 north. I have given freight No. 1 until 10.40 A. M. to make — for you. Run one hour and twenty minutes late at all stations until you pass it."

Ans. 31. ————— Supt."

Would not the following effect the same purpose, and be equally as well understood:

"Conductor No. 1 Express. Run one hour and twenty minutes late at all stations until you pass No. 1 freight. Ans. 31. ————— Supt."

Here is a saving of fourteen words; quite an item when lines are very busy.

The second order reads:

"Conductor Freight No. 1 north. I will give you until 10.40 A. M. to make — for Express No. 1 north, and from there go by rule. Failing to make that time, go by rule. Express No. 1 north will run one hour and twenty minutes late at all stations. Ans. 31. ————— Supt."

Revised with the same effect.

"Conductor Freight No. 1. Run to — if you can make there by 10.40 A. M., to pass No. 1 Express north. Ans. 31. ————— Supt."

Here is an enormous saving of twenty-eight words.

I think it entirely safe to leave out the words "go by rule" (so often mentioned in the orders of our eastern friend), for this reason, that it is well established and understood upon all roads (and by the employees thereof) that are managed upon a correct principle, that whenever a telegraph order ceases to affect a train, that train's only resource is to go by the time schedule "or rules," unless another telegraphic order should be issued, thus showing plainly that there can be no accident attributable to leaving out words that corroborate time schedule. A telegraphic order generally annuls the time schedule for the length of time for which it is given.

The third order is in these words:

"Conductor No. 1 north. I have given Freight No. 2, bound south, until 10.40 A. M. to make — for you. Do not pass that station before that time, unless it has arrived. Then go by rule. Ans. 31. ————— Supt."

The following will effect all that is intended by the above order:

"Conductor Express No. 1. You will not pass north of — until 10.40 A. M. unless No. 2 Freight south has arrived. Ans. 31. ————— Supt."

Here is another saving of sixteen words.

The last example reads thus:

"Conductor Freight No. 2 south. I will give you until 10.40 A. M. to make — for Express No. 1 north, and from there go by rule, failing to make that time go by rule. Ans. 31. ————— Supt."

Revised with equal effect:

"Conductor No. 2 Freight. Run to — if you can make there by 10.40 A. M., to meet and pass No. 1 Express. Ans. 31. ————— Supt."

Here are twelve words more, making a total of 140 superfluous words in four ordinary train orders (considering that all train orders are repeated). I will here state that it is not necessary with us to have both trains at stations when these orders are issued; the operator is held responsible (as our eastern friend says), and immediately proceeds, upon receipt of orders, to put out the proper signal for the train designated in the order. It is then the duty of the conductor, upon receiving such orders, to remain at that station until "O. K." or all right, with the initials of train despatcher, be signed to the order.

In conclusion, let me say that 140 superfluous words in four ordinary train orders of our eastern friend, illustrates plainly that a modification in the mode pursued by him would not only give him more time, but the telegraph would also share this benefit. There are many vicissitudes connected with train despatching which it would be both instructive and interesting, not only to the despatching fraternity but to the railroad operators generally to read about. Let us hear from those who have had experience in the matter. SUPERFLUOUS.

The Claims of United States Military Telegraph Operators.

TO THE EDITOR OF THE TELEGRAPHER.

In your issue of May 11th is a letter from Baltimore, in which is a paragraph worth a thousand dollars to each operator who served ninety days as a telegrapher in U. S. military corps during the war.

If every operator to whom this will apply would at once write an individual appeal to John Ritchie, Esq., M. C., Washington, D. C., asking that such persons be included in the late bill giving soldiers 160 acres of land, if they have served ninety days in the late war, or that a new bill be passed, I think it could be done at once.

Mr. Ritchie would have little to do but present the letters and offer a bill in accordance, provided we go at this unanimously and at once. Mr. R. is working at it now, but must have the help of every one of us. Be quick, and we may fetch it this session.

Who has a better right to land? Has not one operator been worth a thousand soldiers many a time during the military operations which were so extensively manipulated by telegraph? CAMP LINCOLN.

Bounty Land for the Military Telegraphers.

RED BUTTES STATION, WYOMING TERRITORY, }
May 15. }

TO THE EDITOR OF THE TELEGRAPHER.

I NOTICE with pleasure, in the last number of THE TELEGRAPHER, the statement that a bill has been introduced in Congress to grant to the telegraph operators employed in the United States military service during the late war a bounty of 160 acres of public land each.

For one of the parties in interest I heartily endorse this bill, which is but an act of justice. It is certainly time that the services of the military telegraphers should be recognized in some way. About every one else connected with the military operations of the United States armies during the war have received some recognition and compensation.

To the military telegraphers there were no \$500 or \$1,000 bounties paid, and they saw some of the hardest service and times of any engaged in the service. For one I certainly went through sufficient to establish a valid claim, having been captured by Forest, and imprisoned amid the horrors of Andersonville long enough to be entitled to as much as any one who served.

Keep the matter before the public. I am sure you will have the hearty cooperation of every telegrapher interested. E. D. MCNAIR.

Personals.

Mr. CHARLES E. PERRY, formerly Supt. of the A. and P. Telegraph Co., but now United States Consul at Aspinwall, arrived in this city on Friday of last week, per steamer Rising Star, on a visit to his family at Albany, and will return to Aspinwall next month. Mr. PERRY has made an excellent record as Consul, and will be cordially welcomed by his many telegraphic friends.

Mr. W. P. MERRILL, for the last twenty years connected with the telegraph at Portland, Me., in responsible positions, and formerly a leading and active member of the National Telegraphic Union, has purchased the Waumbek House, at Jefferson, N. H., and will keep it as a summer resort.

Mr. J. H. REID has been transferred from Marion, Oregon station, Oregon and California R. R., to Halsey office of the same company, vice Mr. GEO. M. DEVENPORT, resigned, to go to California.

The office at Marion, Oregon, has been closed, and removed to Jefferson, Oregon, where Mr. G. F. CRAW has been appointed agent and operator of the O. and C. R. R.

A new office has been opened at "Front," on the O. and C. R. R., and Mr. J. P. LEMBERT appointed operator. Mr. L. has lately returned from the Atlantic States, and expresses much pleasure at returning to "Webfoot" once more.

A new office has been opened on the O. and C. R. R. line, at Shedd's, Oregon, Mr. C. R. WHEELER, operator.

The office at Aurora, Oregon, on the O. and C. R. R. line, has been reopened, and Mr. JAMES TUCKER appointed operator.

Mr. O. A. TIBBETTS, formerly chief operator O. and C. R. R. east of Portland, Oregon, has retired from telegraphing and accepted a clerkship with the same company at machine shops. He is a good fellow and doing well.

Mr. G. A. TAYLOR has been appointed operator and manager of the Oregon City, Oregon, Western Union office, vice Mr. WALTER FISH, resigned.

Mr. GEO. RICHARD, from the Portland, Oregon, W. U. office, has been appointed manager and operator of the Salem, Oregon, office of the same company, vice Mr. ED. R. OWEN, resigned.

Mr. J. D. GUNN, master of transportation, and train despatcher of the St. Joseph and Denver City R. R. (office at St. Joseph, Mo.), has resigned.

Mr. C. H. PEPPER, late of the Union Depot office at Kansas City, has been appointed master of transportation and train despatcher of the St. Jo. and D. C. R. R., vice GUNN, resigned.

Miss ADDIE E. KENNEDY, formerly of the Pacific and Atlantic New York office, has accepted a position as operator with the Phila., Reading and Pottsville Co. at the Shenandoah, Pa., office.

The Telegraph.

A New Telegraph Map.

THE rapid extension of the telegraph lines necessitates frequent alterations in telegraph maps. In fact, the maps which have been heretofore prepared are completely useless. A first rate map, which should exhibit all the telegraph lines and offices, is a great desideratum, and has yet to be made. Such a map has never yet been published. Occasionally individual telegraph companies have published maps of their own lines, and some years since Mr. M. L. Wood, General Superintendent of the Atlantic and Pacific Telegraph Company, got out a map showing the lines and offices of the companies not working in connection with the Western Union Company, but, as before stated, this is now out of date.

Mr. F. L. POPE has recently prepared for the Southern and Atlantic Telegraph Company a complete map of the lines of that company and its connections, which the company has had lithographed and printed, and a copy of which is now before us. It shows the routes and offices of the following lines, which comprise all of any importance not in the Western Union combination or its connections: Southern and Atlantic, Atlantic and Pacific, Pacific and Atlantic, Franklin, Great Western, International and Northern, Philadelphia, Reading and Pottsville, and Dominion of Canada. It is to be colored so as to show each line separately, and so that it may be readily recognized, and a person can at a glance see on what line an office is situated with which it is desired to communicate.

This map the Southern and Atlantic Company will exhibit in all their offices and will furnish to their principal customers, and it cannot fail to prove a valuable advertisement for that company.

Mr. POPE has done his work well, and the map reflects great credit upon him and also upon the enterprise and shrewdness of the managers of the Southern and Atlantic Company.

Foreign Telegraphic Notes.

CONSIDERABLE extensions of the telegraph are in course of being carried out in Japan, and it is expected that very shortly all the important cities and towns of Japan will be connected by telegraph.

Telegraphs were introduced in Aleppo, Syria, a few years ago, by the Turkish Government; but let not any one suppose that telegraph means the same in Turkey as it does in the West. The motto of everybody in that country is "yavash, yavash" (slowly, slowly), and even electricity is handled by these phlegmatic Turks in accordance with their time-honored customs. Electricity is altogether too fast for the average followers of the Prophet; but, as it pays no heed to "yavash, yavash" after it has started, the Turkish operator delays the message as long as possible at one end, and the Turkish carrier at the other end waits till a quantity of telegrams have accumulated, and then devotes half a day to delivering the arrivals for the week. One gentleman recently telegraphed to Aleppo from Antioch, distant about one hundred miles by telegraph route, and got his answer in just forty-eight hours, though his agent in Aleppo answered immediately.

The proposed meetings of the shareholders of the Anglo-Mediterranean, Marseilles, Algiers and Malta, and British-Indian Submarine Telegraph Companies, have been held in London, and the amalgamation of these companies into a single corporation, and the terms of such amalgamation, which have heretofore been published, were confirmed by the shareholders of the respective companies.

We regret to learn that Mr. Culley, Telegraph Engineer to the Post-office Telegraph Department of Great Britain, has met with a serious accident in Suffolk. While inspecting the construction of some lines of telegraph wire, travelling in a horse and gig near Lowestoft, he was thrown out and received a compound fracture of the thigh, fracture of the collar bone, and other severe contusions.

Advices from Copenhagen state that the Danish war steamer Fylla, which sailed recently to the Faroe Islands and Iceland, has been ordered by the Danish Government to take soundings and survey landing places for the submarine telegraph line intended to connect Scotland with Canada, via those islands.

The laying down of the telegraph wires from the signal station at the Lisard to the Post-office, Falmouth, which was suspended for a fortnight, when within a short distance of the latter station, has now been completed.

The total number of messages forwarded from postal telegraph stations in Great Britain during the week ended April 27th, 1872, was 270,840—an increase over the corresponding week of last year of 49,356.

The total number of messages forwarded from postal telegraph stations in Great Britain during the week ended May 4th, 1872, was 276,493—an increase over the corresponding week of last year of 64,808.

Telegraphic Brevities.

THE Southern and Atlantic Telegraph Co. has adopted F. L. POPE's "Modern Practice of the Electric Telegraph" as a text-book for the use of the employees of the company, and will furnish each of its offices with a copy.

The following telegram was received at the chief signal office in Washington last Sunday morning:

"YANKTON, D. T., May 18.

To General Myer.

A large water spout has destroyed the telegraph line opposite Fort Randall. It will be repaired soon.

(Signed), S. V. CLEVELAND.

Tillotson Coming Home.

Mr. L. G. TILLOTSON, after a very pleasant trip on the Continent of Europe, has, we are informed, returned to England, and will leave for New York on the steamer of the 6th of June, and expects to be home about the 15th of next month. He has enjoyed his European tour very heartily, as well as the relaxation from close attendance upon business. Both he and Mrs. TILLOTSON have enjoyed good health during their journey. They will be cordially welcomed upon their return, and will, no doubt, rejoice to be at home once more.

During his absence Mr. TILLOTSON has carefully studied English and European telegraphy, and has doubtless added much to "what he knows about telegraph wire, instruments and fixtures."

We shall be very glad to see his genial countenance once more at No. 8 Day street.

Complimentary Presentation to Sup't Smith, of the New York Fire Alarm Telegraph.

THE employees of the Fire Alarm Telegraph Bureau, of the New York Fire Department, recently manifested their high esteem and regard for their worthy and efficient Superintendent, Mr. C. KINNEY SMITH, in a most complimentary and gratifying manner.

A very beautiful and valuable cluster diamond ring was procured, and presented to him with the following note:

"NEW YORK, May 7, 1872.

C. K. SMITH, Esq.,

Chief Telegraph Bureau.

Dear Sir—Desiring to present you some token as a testimonial of our appreciation of your worth, and your kindness and courtesy to the employees of your bureau, the accompanying ring has been selected. Your acceptance of it will greatly oblige.

Yours very respectfully,

(Signed), JOHN EMERICK, Chief Operator,"

and by all the employees of the bureau.

The presentation was made by a committee chosen by the signers, Messrs. F. E. GRAHAM, JOHN CAMPBELL, FRANK CLARK, HUGH MCGINLEY and A. J. BRADY.

Mr. GRAHAM, on behalf of the committee, made a

few appropriate remarks on presenting the note and the ring.

Mr. SMITH, who was taken entirely by surprise—the matter having been managed very quietly, so that no previous notice should be given him—was very much affected at this testimonial from his associates and co-workers. He replied briefly but appropriately, cordially reciprocating the good feeling manifested, and returning his heartfelt thanks for the beautiful memento presented to him.

The ability, zeal and energy which Mr. SMITH has brought to the administration of the affairs of the Fire Department, and his kind and considerate treatment of those associated with him, have secured for him a most enviable reputation and popularity.

AN extensive sulphate of copper spring has been discovered in the Fire Hole Basin in Montana. Some enterprising genius ought to start a general battery there, and supply all the telegraphic companies in the country with electricity at reduced rates. Congress might secure it for the use of the Government telegraph. Nothing more would be needed to ensure the success of the enterprise.

Never fight circuit with a cross. It don't know when it is whipped.

New Patents.

For the week ending April 30, 1872, and bearing that date.

No. 126,251.—ELECTRIC TORCH FOR LIGHTING GAS. William W. Hatchelder, New York.

This is an arrangement for an electric torch for lighting gas, complete in itself, and independent of any connection with the gas burners or fixtures thereof, in generating and liberating the lighting spark.

No. 126,263.—ELECTRICAL ALARM APPARATUS FOR BANK SAFES.—William H. Butler and Dubois D. Farneslee, New York.

1. A fluid holding envelope or lining for safes, &c., constructed of glass, substantially as set forth.

2. In an electrical burglar alarm, a liquid circuit breaker, substantially as set forth.

3. In an electrical burglar alarm, a fluid electrical conductor forming any portion of the circuit, substantially as set forth.

4. In a safe protecting envelope or lining, the ferrules and rivets of an alloy of low fusing point, substantially as set forth.

5. A lining adapted to contain a fluid, and operating in connection with an electrical alarm and circuit placed directly within the ordinary fire-proof filling of safes, &c., substantially as set forth.

6. In combination with the fluid conductor herein described and forming part of the circuit, the insulated wire forming the other part and passing directly through the fluid conductor, substantially as set forth.

7. In combination with a safe or vault the system of tubing, liquid circuit closing tube, liquid conductor and alarm apparatus, substantially as set forth.

8. In combination with the tube containing the liquid conductor the caps B B', substantially as set forth.

9. In combination with the sheet metal air enclosing envelope the alloy rivets and liquid circuit closer, substantially as set forth.

No. 126,269.—ELECTRICAL LITING FOR SAFES, VAULTS, &c. William B. Guernsey, Jersey City, N. J.

Electrical conductors constituted of strips of metal of so slight cohesion as to depend for their cohesion and continuity upon the base or support to which they are attached.

No. 126,363.—PRINTING TELEGRAPH. Henry Van Hoesenbergh, Brooklyn, N. Y.

1. An electro-magnet armature in which the armature is held to the cores by induced magnetism, except momentarily, when the polarity of the current is changed, in combination with a type-wheel and step-by-step movement and impression mechanism, substantially as set forth.

2. The armature of an electro-magnet held by induced magnetism, in combination with an impression lever of a printing telegraph, and a locking mechanism to hold the printing lever, except momentarily, when the polarity of the electric current is reversed, as set forth.

3. A locking lever, combined with stops upon the impression lever and type-wheel lever, to hold the latter and release the former simultaneously, and vice versa, substantially as set forth.

4. The swinging arm and teeth 22, 23, in combination with the arm 10 and detents 24, 25, and 26, and stop 27, substantially as set forth, for stopping the type-wheels in unison.

5. The feeding pawls, with a friction applied to hold the same, in combination with the finger 6, roller 4, and impression lever, substantially as specified.

6. An impression magnet, a type-wheel magnet and a controlling magnet all in the same or branch electric circuits, and mechanism operated by the controlling magnet for preventing the action of the printing lever, except momentarily, when the polarity of the circuit is reversed, as set forth.

No. 126,366.—COLLECTING ELECTRICITY FOR TELEGRAPHING, &c. William Henry Ward, Auburn, N. Y.

1. A tower constructed so as to collect, hold, distribute and utilize aerial currents of natural electricity for telegraphic and other purposes, essentially as described.

2. A tower for collecting aerial currents of natural electricity, constructed of three sections, insulated from each other and the earth, or their equivalents, substantially in the manner described.

3. In an electrical tower the combination of the shutters or slats g with the ventilator vane in such a manner that the vane, through suitable mechanism, always opens the shutters to windward and closes them to leeward, substantially as described.

4. In an electrical tower the collecting distributing and protecting roof H, substantially as and for the purpose described.

5. The combination of the tube J and ventilator L with its vane M and the coiled wire or small cable g, substantially as and for the purpose set forth.

6. The combination of the insulated shaft k and rods a, having forked upper ends k' with the shutters or blinds g, serpentine cam plate c, and ventilator L, substantially as and for the purpose described.

Married.

BUCKINGHAM—HULL.—At the residence of the bride's father, St. Joseph, Missouri, Tuesday evening, May 7, 1872, by the Rev. Dr. RUNDIE, HENRY G. BUCKINGHAM, manager of the Fort Scott, Kansas, Western Union Telegraph office, to Miss REBECCA HULL, of St. Joseph, Mo. No cards.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.

FRANK L. POPE, Associate Editor.

SATURDAY, MAY 25, 1872.

The Telegraphic Fraternity and the Postal Telegraph Projects.

At a hearing before the Committee on Appropriations of the House of Representatives at Washington, which was reported in *THE TELEGRAPHER* of April 27, Mr. R. B. LINES, in the course of an argument before the Committee, asserted that he *knew* that the Government telegraph project was favored by a majority of the practical operators of the country. Mr. LINES was formerly himself a practical operator, although at present a clerk in the Treasury Department at Washington, and, we do not doubt, honestly believes in the propriety and advisability of the telegraph becoming a part of the Government machinery. As the private secretary of Gen. WASHBURN, when that gentleman was a member of the House, and the successor of his brother, Mr. E. B. WASHBURN, as the leader in the Postal Telegraph project, Mr. LINES was prominently interested in the movement, and through the columns of *THE TELEGRAPHER* ably discussed that side of the question. His position at that time brought him in contact necessarily with those who were *then* inclined to favor the project, and no doubt impressed him with the belief that a majority of the practical operators did and do favor a Government ownership and management of the telegraphs of the country.

Whatever may have been the fact heretofore, we are confident that *now* he is entirely mistaken in the assertion. There was at one time a much more general inclination to support a Government telegraph on the part of the telegraphic fraternity than there is now. The discussion of the subject in the columns of *THE TELEGRAPHER* has done much to enlighten them upon it, and to convince them that neither their personal interests nor the interests of the public are likely to be advanced by the transfer of the telegraphs from private and corporate to Government management. Our correspondence and personal communication with the telegraphic fraternity is quite extensive, and we are satisfied that a considerable majority of the fraternity are decidedly opposed to any Government interference with the telegraph interests of the country.

We do not propose at this time to rehearse or repeat the arguments against a Government telegraph. Our readers are tolerably familiar with them already, and there is beside no prospect of immediate Congressional action upon the subject. Before any scheme for a Government telegraphic control can receive the sanction of Congress it must be discussed fully, and occupy more time than the present Congress, either at this or the final short session next winter, can devote to it.

We are gratified to know that Mr. LINES, although favoring and earnestly advocating the postal telegraph as a Government matter entirely, is as inflexibly opposed to the GARDINER HUBBARD project as *THE TELEGRAPHER*. It is matter of great surprise that Committees of both the Senate and House of Representatives should decide to report favorably upon that, as we consider it, most mischievous project. It is neither one thing or the other—making the telegraph a sort of hybrid concern, for which neither the corporation nor Government is responsible. It has all the vicious features of both corporate and Government telegraphic management, with nothing as compensation except a delusive project for reduction of rates.

We do not believe that any Congress will ever sanction it, and the only recommendation it has is that it postpones and paves the way for the appropriation of the thirty millions or forty millions of dollars of which the assumption of telegraphs must necessitate the immediate investment from the National Treasury.

We fully agree with Mr. LINES, that, as between the two, the Government telegraph, pure and simple, is decidedly preferable. We have seen and heard of but

very few telegraphers who favor the HUBBARD scheme, and, small in number at first, they have grown "smaller by degrees and beautifully less."

There is most excellent reason why, viewed merely from a selfish standpoint, the telegraphic fraternity should look with disfavor on the HUBBARD scheme. Under such an arrangement as the one proposed by him all competition for the services of telegraphers would be done away with. There would be but one company to employ them, and that company, being entirely relieved from the stimulus and danger of competition and responsibility for damages, would naturally employ only such operators as would accept minimum salaries. Public opinion would not have the weight or influence, as regards the management, that it would have, even with a telegraph owned and operated by the Government. It would afford first class opportunities for college plugs, and we have no doubt but that the so-called telegraph colleges would abundantly thrive under such an arrangement—while, even more than is the case now, the best operators would be forced to abandon the business, either from inability to obtain situations or from the meagre salaries paid for telegraphic services. For these and many other reasons, which time and space fail us to enumerate, the telegraphic fraternity are and must be, if only from regard to their own interests, almost unitedly opposed to the HUBBARD scheme. But there are higher principles involved in this matter, and we hope that the day may be far distant when it shall be our duty to record in *THE TELEGRAPHER* the transfer of the telegraphs of the United States to either Mr. HUBBARD's hybrid corporation, or to the control and management of Government officers, as a branch of the Government business. If it should ever come, our advice to all first class telegraphers would be to use their utmost diligence and best exertions to get out of a business which thenceforth would not be worth their following.

The Western Union Telegraph Company Endorsing Plug Factories.

THE official organ of the Western Union Telegraph Company is trying to puff into notoriety and profitable patronage a newly established so-called Telegraph Institute, set up in this city by one RANDOLPH, formerly, as we understand, a railroad operator in some small station on the Erie Railroad. It is asserted by this person that he is authorized by the officers of the Western Union Company to state that "all of his pupils who may creditably pass a Board of Examination, appointed by the above company, shall receive positions as operators, if at that time a vacancy should exist."

This is a specious but very deceptive inducement to ignorant parties to help pay the proprietor's expenses. He knows very well that the chances of any of his pupils ever *creditably* passing a Board of Examination are so infinitesimal as not even to constitute an algebraic unknown quantity—and if, by some strange combination of circumstances, a student should so pass, his chances of appointment are qualified by the condition that a vacancy shall then exist. It won't do, Mr. RANDOLPH. You know that the money paid you is thrown away, and we would advise you to seek some more honest and reputable means of prolonging your existence.

It is a very contemptible business for officers of any telegraph company to allow themselves to be used as confederates of such institutions, to aid in securing the patronage of country gudgeons, with the expectation that they may receive lucrative appointments upon the occurrence of some improbable or impossible combination of circumstances. Did not the statement appear in the official organ, with a *quasi* editorial endorsement, we should not credit the assertion that any respectable telegraph official would cooperate in such business.

"Modern Practice of the Electric Telegraph."

THE sixth edition of this standard telegraphic work is rapidly being sold, and Mr. VAN NOSTRAND is getting ready for a seventh. The success of this work has been most marked, and the sales seem to increase rather than diminish. It has been adopted as a textbook by the Signal Bureau of the United States Army and by the Southern and Atlantic and other telegraph companies. Its success has been much greater than

that of any other telegraph work published in this country, and it is fully deserved. Much care and labor was spent in its preparation originally, and the subsequent revision added largely to its value.

Inefficiency of the English Block Telegraph System for Railways.

THE Mechanics' Magazine, of May 11th, says: "It appears that the 'block system,' which is in operation on many of our railways, by no means necessarily insures that immunity from accidents which is commonly supposed. Captain Tyler having investigated the circumstances of the recent collisions on the Metropolitan Railway at the Bishop's road station, and on the West London extension at the Lillie Bridge sidings, reports to the Board of Trade that the regulations of the companies are systematically disregarded by the signal men. According to the rules laid down a communication should take place between two adjacent signal boxes before any train is permitted to pass on that portion of the line between them. Had this been done the Lillie Bridge collision would, it is stated, never have occurred; but the signal man at the place confessed that it was his practice, from day to day and from hour to hour, entirely to ignore the regulation; which, moreover, his superior, the signal inspector, assured Captain Tyler could not be carried into effect even if attempted. Practically, then, the block telegraph system, which is supposed to secure the safety of the traffic, is not really in operation on these lines; and it appears further that, from the imperfect way in which it is carried out, there is actually more danger than if it were not even nominally in force, as a false confidence is thereby produced in the minds of the railway officials. An alteration in the working of the system which, it is said, will remedy the existing evils, has been proposed, and we trust that if the change is calculated to secure the safety of the public, it will be immediately carried into effect."

We are not surprised at this unfavorable statement in regard to the practical operation of the "block telegraph system," as operated on the English railways. It depends for its reliability and efficiency upon the absolute fidelity and unremitting attention of so many individuals, that frequent failures to carry it out are inevitable. The only system which can be worked with absolute certainty is an automatic system of electric safety signals, which are operated by the passage of the trains over the rails. By such a system the responsibility is brought down to the individual whose duty it shall be to keep up the batteries and see that the signals are kept free and clear; and even if he fails in his duty from any cause, there is no liability of danger with ordinary care and prudence on the part of the engineer. If the safety signals are not displayed, from any cause, it would be the duty of the engineer to stop his train and ascertain the reason, or, at all events, to proceed slowly and with caution, so as in any event an accident would be practically impossible.

Such a system has been in experimental and entirely successful operation for several months past at the Boston station on the Boston and Lowell road, and it will, without doubt, be eventually generally adopted on all first class roads.

Bradley's Improved Premium Telegraph Instruments.

ATTENTION is called to the advertisement of BRADLEY'S Improved Premium Telegraph Instruments by F. L. POPE & Co. But a small stock of these instruments remain unsold, and these have been placed in the hands of this firm for sale, in order to close out the business. Dr. BRADLEY some time ago decided to retire from the business of manufacturing these instruments, in order to devote his attention mainly to the manufacture of his celebrated patent Naked Wire Magnets, for which the demand has rapidly increased of late.

Of his stock there remains now but a few each of Registers, Relays, Box Relays and Sounders, which Messrs. POPE & Co. will now close out on reasonable terms. Parties desiring to purchase must make early application, or the chance of securing any of these instruments will be lost.

New Wires to Philadelphia.

THE Franklin Telegraph Company have completed the two additional wires from this city to Philadelphia, and have six wires from Boston to New York, seven wires from New York to Philadelphia, and four wires from Philadelphia to Baltimore and Washington. This company is said to be doing a very excellent business now, and to be in a much better financial condition than ever heretofore. The receipts show a very satisfactory surplus over expenditures.

OPERATORS, ATTENTION!**BOARD IN SOUTH BROOKLYN.**

First Class Accommodations for Four more Telegraph Operators. House new; brown stone front. Excellent neighborhood. Only six minutes' walk from South Ferry. Every room heated by a register. Bath, gas, and every comfort of a home. Terms—\$8 to \$10 per week. Call at 140 President Street, Brooklyn.

BRADLEY'S RELAYS, SOUNDERS AND REGISTERS FOR SALE.

The remaining stock of Improved Premium Telegraph Instruments manufactured by Dr. L. BRADLEY, with his superior patent

NAKED WIRE HELICES,
has been placed in our hands for sale. These consist of
**REGISTERS,
RELAYS,
BOX RELAYS,
SOUNDERS.**

As Dr. BRADLEY has retired from the manufacture of Telegraph Instruments, on account of the extensive and increasing demand for his **NAKED WIRE MAGNETS** requiring his special attention, this is the only opportunity there will be to obtain these

SUPERIOR AND FAVORITE TELEGRAPH INSTRUMENTS.
There are but few of these Instruments remaining unsold, and we will dispose of them on favorable terms as regards price. **BRADLEY'S RELAYS** were awarded the First Premium at the Great Fair of the American Institute.

For particulars, terms, etc., address

F. L. POPE & CO.,
P. O. Box 6910 194 Fulton Street, New York.

R. S. WHITCOMB,

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DEALER IN TELEGRAPH POLES

keeps constantly on hand and for sale a full assortment of all lengths and sizes of **TELEGRAPH POLES**, and is prepared at all times to fill orders and make contracts for supplying Poles on the shortest notice.

Yard and Office on FISK STREET, near TWENTY-SECOND, Chicago, Ill.

CHARLES WILLIAMS, JR.,

(ESTABLISHED 1856.)

109 Court Street, Boston,

has for sale the various kinds of Office and Magnet Wires, including Cotton Covered, Silk, Gutta Percha, Painted, Fancy, and **DAY'S KERITE COVERED WIRE.**

16,000 MILES

OF

"JOHNSON'S" WIRE

USED BY THE

TELEGRAPHS OF THE UNITED STATES

DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
MANCHESTER, ENGLAND.

Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

TELEGRAPH LINES

OF ANY LENGTH FULLY EQUIPPED WITH

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" " " American Compound Wire.

" " " Cauvet's Patent Screw Insulators.

" " " Sam'l O. Bishop's Insulated Wires and Cables.

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THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

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Alleghany, Pa.,
Boston, Mass.,
Bridgeport, Conn.,
Buffalo, N. Y.,
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Cincinnati, Ohio,
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Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
Washington, D. C.,
Worcester, Mass.

The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only **PERFECT, COMPLETE and RELIABLE** System

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM

AND

POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. **GAMEWELL & CO.** are the owners of the original **FARMER & CHANNING PATENTS**, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure **ANY POSSIBLE IMPROVEMENT** which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION of CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, **THERE CAN BE NO QUESTION.**

The cooperation of **TELEGRAPHERS** in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

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TELEGRAPH ENGINEER,
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AND EVERY DESCRIPTION OF
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BUNNELL'S PATENT REPEATER.

These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

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a most compact and reliable Switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

EXCLUSIVE AGENTS OF

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KERITE,

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COMPOUND RUBBER COVERED WIRE.

SUBTERRANEAN & AERIAL WIRES,

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HIGHEST INSULATION.

We are now prepared to furnish, after an experience of three years, an Insulated Wire, which can be buried in the earth or exposed to rain and sun, or to the vapor of acids, without injury. Professor SILLIMAN, who has exposed it to the most destructive agencies, finds that it remains uninjured in an atmosphere of ozone, which would destroy gutta-percha in a few hours. It exceeds glass or any other known substance as a non-conductor.

We have made special arrangements to furnish this article for office purposes at a reduced rate.

ALSO, TO FURNISH

IRON CLAD CABLES,

of the usual size, with KERITE COVER, believing that it will exceed, in insulation for submarine purposes, ANYTHING HITHERTO MANUFACTURED.

We shall be happy to furnish estimates for any amount and size of cable, which will be found to compete with any other construction, both in quality and price.

We manufacture the Genuine ELECTROPOION BATTERY, with Patent Platina Connection, introduced by us eight years since; also, THE ALPHABETICAL OR DIAL TELEGRAPH, now extensively used in this and other cities for private lines, being easily and quickly learned by any one.

We offer for sale, among other novelties, a SOUNDER that will work practically with a single DANIELL cell, a BATTERY that does not require to be taken down but once a year, and the very best MAIN LINE SOUNDERS made.

Our CATALOGUE, embracing a large amount of new matter and description, is now ready for distribution.

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The superiority of the COMPOUND TELEGRAPH WIRE compared with iron, consists in its LIGHTNESS, reducing by over fifty per cent. the number of poles and insulators required;

Relative TENSILE STRENGTH, homogeneity and elasticity—decreasing the liability to breakage from cold weather, sleet, etc.;

CONDUCTIVITY—insuring great improvement in the working of lines in any condition of the weather;

And in its DURABILITY, which greatly exceeds that of the best galvanized iron wire;

Altogether resulting in a very great reduction in the cost of maintaining and working telegraph lines, while, at the same time, insuring

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Address—

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Montreal Telegraph Office at Kingston.

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which are in use on the POLICE TELEGRAPH and many PRIVATE LINES in Boston and vicinity.

They require no Battery, and are always ready for use, thus avoiding the expense, trouble and uncertainty attending any instruments to which Batteries are necessary. They are easily worked, having a straight Key-board, with a key for each letter and figure; are much more rapid than any Printers, and work well on LONG or SHORT LINES.

They are the BEST Instruments for RAILROAD COMPANIES or PRIVATE LINES that have been produced—as Conductors, Engineers, Station Masters and others can telegraph by them rapidly in ROMAN LETTERS.

We also manufacture PRINTING TELEGRAPH INSTRUMENTS, which are the most CORRECT and RELIABLE in use.

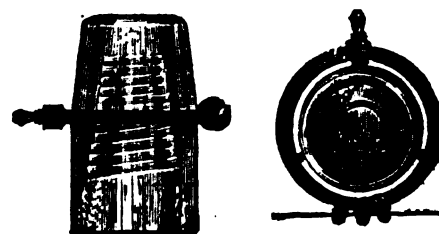
As the Type-wheel is adjusted instantly after printing each letter, no mistake can occur, except through the neglect of the operator, and they are as RAPID as any other SINGLE WIRE Printing Instruments in use.

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The undersigned solicits examination of some of the reasons which have induced him to recommend to his patrons and friends the Insulator exhibited above as the best and cheapest in use.

Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal.

As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

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The attention of

Telegraph Companies, Superintendents and Line Builders is called to a

New Article of TELEGRAPH LINE WIRE

OF UNEQUALLED QUALITY AND UNIFORM EXCELLENCE.

While great care and attention has been given to Instruments and Insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European Governments, only fit for fencing purposes. Many tons of such material now remain here, utterly unsalable and unfit for use.

The researches of the able electricians of Europe have resulted in establishing a standard of excellence for Telegraph Wire far exceeding that with which we have heretofore been satisfied.

We extract from the minute and specific details a few of the requirements of a

STANDARD GOVERNMENT WIRE.

1st.—The wire supplied under this tender must be of the gauge known as No. 4, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable, and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from seams, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be coiled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications a breaking strain of 1,260 pounds on No. 4 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

We now offer for sale this Uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market, to which this system of tests is uniformly applied.

We shall designate it by the Trade Mark,

CHESTER, A 1,

and our customers ordering it may be sure of receiving an article always uniform, and always the very best.

The capacity or endurance of No. 4 is 21 to 23 TWISTS UPON ITSELF in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

COMPARATIVE AND COMPETITIVE TESTS

with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 29. The omission of the elongating process would increase the flexibility and the tenacity.

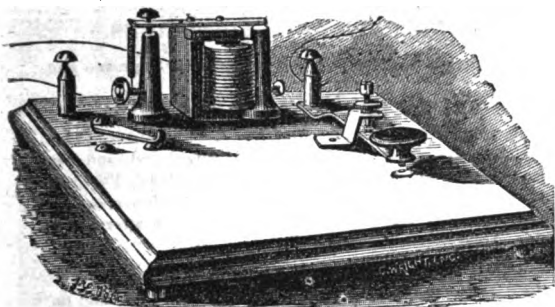
Although the wire has been proved INCREDIBLY SUPERIOR to that commonly sold, its price will closely approximate to that of the inferior article.

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THE NONPAREIL TELEGRAPH APPARATUS.



PATENT APPLIED FOR.

This apparatus supplies a want which has long been felt, viz., that of a simple and cheap

MORSE TELEGRAPHIC INSTRUMENT,

with all the necessary batteries and other appurtenances, in a CONVENIENT and COMPACT form.

By means of a switch (which is now attached to every Instrument) they may be worked either on the open circuit or the ordinary continuous (closed) circuit, as may be desired.

It is intended especially for the use of

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but will be found to be equally adapted for use on

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or SHORT LINES of any description. The Battery is a novel, compact and efficient arrangement, especially adapted to the purpose for which it is designed.

Each Instrument will be accompanied with a

BATTERY,

CHEMICALS FOR BATTERY, and

INSULATED WIRE, for connections,

together with an ILLUSTRATED BOOK OF INSTRUCTIONS, which is in itself a COMPLETE ELEMENTARY TREATISE on the art of telegraphy.

PRICES.

Single Instrument, complete, with Batteries, etc. \$8 00

Pair of Instruments, " " " " " " " " 16 00

Sent by express on receipt of price.

Remittances may be made by P. O. Order, Registered Letter, or Draft payable to our order.

Persons ordering Instruments are requested to write plainly, giving Post-office, County and State, with instructions for shipment.

Address,

F. L. POPE & CO.,

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The NONPAREIL TELEGRAPH APPARATUS may be procured through the leading dealers in Telegraphic Supplies throughout the country.

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GRAY & BARTON,

AGENTS FOR THE UNITED STATES.

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APRIL 4.

Below find list of Solid Gold Badge Pins now manufactured by us.

Key Pin, Oval Base, one inch long.

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Conductor's Punch Pin.

Passenger Car Pin (Pullman's Palace Pattern).

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We will warrant any of the above Pins to be perfect Facsimiles and of the most approved pattern. Address,

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ROBERT BROWN, TELEGRAPH CONTRACTOR.

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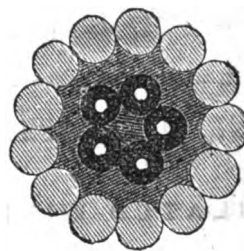
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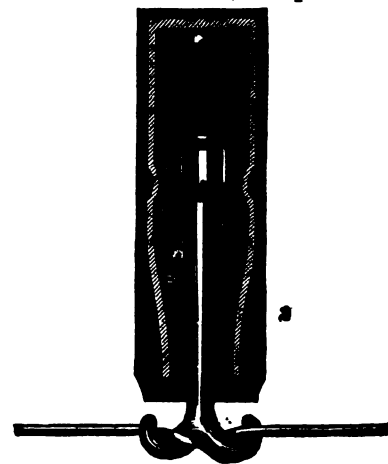
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The Telegrapher.

A Journal of Electrical Progress.

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Original Articles.

The Unit Measure of Electrical Resistance.

SINCE the electric telegraph has been in existence quite a number of different units of electrical resistance have been proposed, but at the present time nearly all of these units have been adjusted to one standard, so that one of them may now be considered as the basis of all.

Prof. Wheatstone proposed as a unit one foot of copper wire, weighing one hundred grains.

Prof. Jacobi proposed a copper wire one metre long and one millimetre in diameter.

Prof. Matthiessen proposed a copper wire one statute mile in length and one sixteenth of an inch in diameter.

Mr. C. F. Varley's unit is a mile of special copper wire one sixteenth of an inch in diameter.

Dr. Werner Siemens employed a glass tube filled with pure mercury. This tube was one metre in length and contained a column of mercury, having a transverse section of one square millimetre.

The German, French and Swiss telegraphers used a certain length of their standard sized iron wire, such as was used for the construction of overland telegraph lines, as a practical unit of measurement.

The British Association proposed and adopted a theoretical unit of resistance, in which a certain amount of work or mechanical effect is produced by a given amount of electricity in a given length of time, and this theoretical resistance is copied or represented by a certain length of wire.

This unit is beautiful in theory but difficult and uncertain in practice. The principal source of difficulty lies in the accurate measurement of the mechanical effect of the electric current. Since this unit has been adopted by the British Association some of the most expert Continental physicists have, by experiment, arrived at the conclusion that it is about two per cent. smaller than the copies distributed by the association.

The objection to the employment of copper wire of various sizes as a standard, arises from the fact that no two specimens of copper, or of any other metal, possess precisely the same specific conducting power, and, therefore, measures of resistance thus defined are liable to vary, and, in fact, do differ from each other very materially.

This objection, however, does not apply to mercury, which, in consequence of its fluid nature, is easily rendered chemically pure. In fact, experience has shown that resistances can be produced and reproduced by means of mercury, which do not vary among themselves more than two or three ten thousandths of a unit, or about as near as the finest set of silversmith's scales can be made to balance and weigh alike.

In deciding upon a standard of measurement, the first and most important consideration is to select one which is least likely to undergo change or variation, so that when they become multiplied and brought into general use one of them will always correctly represent another.

If we suppose, for example, that a person should undertake to construct a two foot rule: He first selects a standard as nearly correct as possible, and copies it with great care. Suppose he then destroys the first and makes a third from the second, and a fourth from the third, and so on until he has made a thousand, and all of his measures except the last one made have been destroyed.

Now, we will suppose that another person commenced making two foot rules in the same manner, and using the same original standard to copy his measures from, and in the same way copied one from another to the number of a thousand. If these two persons compared their final measures with each other it is more than probable there would be a considerable difference—that is, they would not agree one with the other. In view of this disagreement, how could it be decided which was the most correct, as the original standard is no longer in existence? In some such condition would two persons be, each having British Association units of measurement. They cannot get at the original unit, because it never had a practical existence.

The mercury unit, on the other hand, has for its basis the metre measure, which is defined as the ten

millionth part of the distance of the pole of the earth from its equator, and very nearly the length of a pendulum that beats seconds.

The British Association unit forms part of a system. The resistance bears the same relation to the other conditions that distance does in the definition of a horse power. A horse power is that force which will raise 33,000 pounds one foot in one minute. Similarly, a British Association unit is the resistance of the circuit producing a defined mechanical effect or work in a certain time, with the other conditions of quantity and intensity defined as units. As before stated, the great difficulty lies in the correct measurement of this mechanical effect. In order to accomplish this the British Association made use of a magnetic needle, that is, a magnet held in its position by the magnetism of the earth, which is never in itself constant, and is at all times in a state of perturbation. It results from this that the force required to move this magnet equally, at different times, will not be the same. In addition to this the magnet is affected by local causes, and in no two different localities can it be said to be affected precisely alike. From these and other reasons, German scientists of the highest rank, as the result of their investigations, have announced that the British Association unit, as distributed by their committee, does not approximate its true value within nearly two per cent.

It was after careful consideration of the defects in the different standards of electrical resistance, and with the desire to adopt the one which was least liable to objection, that the International Convention of Electricians at Vienna, in 1868, adopted the mercury unit as a standard, and all the European countries, with the exception of Great Britain, have adjusted their resistance scales to it. Mr. Varley has defined his unit, or "readjusted it to 25 mercury units."

Mr. Latimer Clark defines the B. A. unit, or Ohm, as "the resistance of a prism of pure mercury one square millimetre in section and 1.0486 metres in length at 0° centigrade," so that, in reality, the mercury unit is now the basis or standard of all the measures in use.

The average resistance of a statute mile of good No. 9 galvanized wire, such as is generally used in this country, is about 20 mercury units.

Nature of the Action in Galvanic Batteries.

Prof. G. W. HOUGH, Director of the Dudley Observatory at Albany, N. Y., has made a series of experiments on galvanic batteries, extending over several months, for the purpose of investigating the cause of the decline in the strength of the electric current after the battery has been in operation for a long period. It is well known that, since the invention of the American method of recording transits, the galvanic battery has become one of the necessary instruments in every first class observatory. The application of electricity also to the registration of meteorological phenomena makes it desirable to secure the best form of battery, as well as to be able to know what is the difficulty when the battery begins to fail in its work. Some of the leading conclusions reached by Professor Hough were as follows:

1st. In the sulphate of copper battery (Daniell's form) the principal cause of decline in the strength of the electric current is due to the formation of sulphate of zinc.

2d. The quantity of electricity flowing in the external circuit depends upon the specific gravity of the sulphate of zinc.

3d. When the sulphate of zinc approaches saturation polarization takes place in the battery itself; and, although the electro-motive force remains the same, the internal resistance may be increased more than a hundred times.

4th. The sulphate of zinc (or any fluid about the zinc) is only useful as a conductor of electricity.

5th. The copper, or negative metal, is useful only as a conductor, since it may be replaced by any other metal, even zinc itself.

6th. The internal resistance of the battery has been separated into two parts, viz., that due to the porous cell and that due to the liquids employed. The specific resistance of the liquid was found to be 13; that for a small clay cell, 17, and for a leather cell, 7.

Since the resistance of the leather cell is less than one half that of a clay cell, it has been used in the construction of batteries at the observatory, as the quantity of electricity is nearly doubled without any increase of surface. For the negative metal, in place of the copper hitherto employed, we have used sheet lead.

These investigations have rendered it possible to compute, with great precision, the length of time a battery will generate its normal quantity of electricity, provided the amount of electricity flowing in the external circuit is known, and the capacity of the vessel holding the sulphate of zinc is determined. The specific gravity of the sulphate of zinc should not be less than 15 or more than 35 degrees Baumé.

A new mechanism for the more thorough investigation of galvanic batteries has been devised by Prof. Hough, but not yet constructed, by which the quantity of electricity flowing in the external circuit will be recorded in the form of a curve so long as the battery is in action. This subject is one of great interest and importance, and it is proposed by Prof. Hough to continue his investigation as circumstances may permit.

An Apostrophe to the Telegraph.

By J. U.

Oh, ye Telegraph! ye crowning invention of the 19th, how are ye? What wonders hath been wrought in thy name!

Full many a time and oft thou hast created discord in the bosom of a family by thy sportive fancy: when thou madest *pater familias* tell his loving daughter at the boarding school to "cog hog gether is sick," when he only wished to tell her to "come home, mother is sick."

And again, when Adolphus, sighing for a *tete-a-tete* with his Matilda, sends a message to her asking, "Will you be at home this evening?" you naughty Telegraph makes him say, "Will you beat hog this evening?"

What sad havoc thou hast made with the names of our distinguished fellow citizens.

How thou hast puzzled the brains of our delivery clerks in the vain endeavor to deliver a message addressed "N. Y. Pastor," when it was meant for Tony Pastor; or a message to "Col. T. Allston Brown," when you made it "Colt all Stone Brown."

I could go on and recount innumerable cases, oh, mighty time killer, where thy sagacity was at fault; but let these few suffice.

Great is the construction of thy language, oh, Telegraph, and peculiar are its interpretations!

Base Ball.

MORSE vs. GREELEY.—These clubs, composed respectively of the employes of the Western Union Telegraph Company and the New Orleans *Republican* office, contested their first game this season on the Delachaise Grounds yesterday afternoon, in the presence of a large assembly of persons, who were treated to rather a spirited exhibition of the science of ball tossing—especially so at the hands of the Morse Club, who although showing in the van by a score of 1 to 5 at the close of the first inning, made several brilliant rallies at the bat thereafter, in two innings scoring respectively 15 and 16 runs, and achieving a signal success by a final count of 54 to 31.

Annexed is the score:

MORSE.					GREELEY.				
B.	O.	R.	O.	R.	B.	O.	R.	O.	R.
Blaney, P.	9	0	Brennan, C.	5	2				
Whitford, C. F.	6	4	McDonald, D.	3	4				
Graham, A. S.	5	4	Smith, I. F.	4	3				
Fisher, 3d B.	7	1	Cooley, C. F.	4	3				
Rankin, C.	6	3	Tucker, 3d B.	4	4				
Boecher, I. F.	4	4	Sullivan, 2d B.	5	2				
Landy, W. 2d B.	5	4	Normand, R. F.	1	2				
Murphy, 1st B.	7	3	Zimmerman, 3d B.	1	5				
Landy, M., R. F.	5	4	Boyle, 1st B.	4	2				
	54	27		31	27				
In each inning....									
	1	2	3	4	5	6	7	8	9
Morse	1	5	16	5	0	4	0	15	8
Greeley	5	3	0	5	6	3	3	3	31

Home runs: Morse Club—Whitford 1, Graham 2, Fisher 2, W. Landy 1, Murphy 3; total, 9. Greeley Club—Sullivan 1; total, 1.

We are authorized by Capt. Whitford, of the Morse Club, to state that they reiterate their challenge to the employees of any business house in the city.—*New Orleans Times*, May 20th, 1872.

The Morse and Greeley Clubs, the former representing the employees of the Western Union Telegraph Company and the latter the *Republican* office of this city, came together at the Delachaise Grounds. The Morse fellows were full of electricity, and had about them a kind of electric thump. The Greeley boys fought well, but the score was 54 for the Morse and 31 for the Greeley. Flanery must have been about there. The Morse boys reiterate their challenge to the employees of any house in town.—*New Orleans Picayune*, May 21st, 1872.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Congress and the Telegraph.

WASHINGTON, D. C., May 29.

TO THE EDITOR OF THE TELEGRAPHER.

The resolution for the adjournment of Congress on the 29th (to-day) has been rescinded, and the termination of the session fixed for June 3d, and it is not improbable that it may be still further extended to the 5th of June, as much important legislation remains to be perfected. The House is well up with its business, but the Senate, where there is no restriction upon the time which members may use up in debate, and no "previous question" to shorten proceedings, is, as usual, much behindhand.

On Monday of last week Mr. Wood, from the House Committee on Foreign Affairs, reported the bill relative to telegraphic communication between the United States and foreign countries, which had been previously reported and recommitted. This is substantially the bill which was passed unanimously at the last Congress, but which was vetoed by the President on account of objection to one provision in it, which has been omitted from the present bill. It provides that all communication established, or that may hereafter be established between the United States and any foreign country, by means of telegraphic or magnetic lines and cables, shall be subject to the following conditions, stipulations and reservations: The Government of the United States to be entitled to similar privileges, with regard to the control and use of such lines and cables that may by law, agreement or otherwise, be exercised and enjoyed by any foreign Government; citizens of the United States shall have the same terms as regards payment of rates for transmission as citizens of foreign countries; transmission of despatches shall be made in the following order: first, despatches of State, under such regulations as may be agreed upon by the Governments interested; second, despatches on telegraphic service; third, private despatches; fourthly, the lines of any such cables shall be kept open to the public for the daily transmission of market and commercial reports and intelligence, and all messages, despatches and communications shall be forwarded in the order in which they are received, except as hereinbefore provided; fifthly, it shall not be lawful for two or more companies to consolidate or unite their interests without the consent of the Secretary of State of the United States, and upon such terms as he may determine. If any two or more of such companies have combined, or shall combine to fix the rates of compensation for messages, it shall be the duty of the Secretary of State, in the absence of the international convention regulating the matter, to determine such rates, and establish such rules and regulations with regard to them as he may judge necessary; and the exercise of these powers shall be subjected to the control of Congress, and be applicable to existing cables as well as those hereafter established.

The second section provides that, subject to such grants as have heretofore been made by Congress, the Secretary of State is authorized to grant permission to any citizen, or association of citizens of the United States, to connect by telegraphic wires the territory of the United States with any foreign country which shall have granted, or agreed to grant to such applicants permission to land and work such wires upon its shores; and to grant to foreign citizens or associations similar permission; provided, that the foreign country proposed to be so connected shall have granted, or agrees to grant to citizens of the United States the same rights and privileges for landing and working telegraphic wires on its shores as it has granted or may grant to its own citizens.

The third section provides for the punishment by a fine not exceeding \$5,000, or by imprisonment not exceeding three years, of any person connected with any such telegraph company who may, contrary to his duty, disclose or intercept the contents of any message or any part thereof, or who shall injure or destroy any cable or other property of the company, or interfere with the working, repair, or use of any cable or line connected with such cable, and gives the injured party a right of action for damages. It is made the duty of the Attorney-General to prosecute all persons offending against any provisions of this act, in the district courts of the United States.

Mr. Wood explained and urged the passage of the bill, and it was passed. If it is reached in the Senate it will no doubt pass that body and become a law at the present session.

After this important measure was disposed of, Mr. Conger, by unanimous consent, made a humorous speech in favor of the bill to incorporate the Loomis Aerial Telegraph Company. This bill was referred to the Committee on Commerce, which has reported favorably upon it. Your readers are probably familiar with Dr. Loomis's theory, which has, I believe, been explained heretofore in the columns of THE TELEGRAPHER, but, for such as may be in ignorance, the following explanation, extracted from Mr. Conger's speech—for which it is to be regretted room cannot be spared to report the whole—will enlighten them:

Mr. Speaker, the object of this bill is to enable the gentlemen interested in the invention, citizens mostly of this district, to associate in a corporate capacity and accumulate sufficient capital, by the voluntary contribution of those who have faith in the theory of the inventor, to develop an alleged system of control over the mysterious elements of nature, the most marvelous that ever entered into the conceptions of the human mind.

This theory assumes that the earth itself, the atmosphere surrounding it, and the infinite depths of space encompassing this aerial world, contains a succession of concentric circles or planes of electricity, of which those nearest the earth are perpetually disturbed by oceanic currents, atmospheric changes, alternation of day and night, and the ever varying effects of solar radiation and lunar influence; but that above these, pierced, perhaps, by the tops of the loftiest mountains, are concentric circles, or vast surrounding seas of undisturbed electricity, which may be affected by any interpenetrating galvanic force from beneath, causing electrical vibrations or waves to pass from that point within such electric plane around the world—as upon the surface of some quiet lake one wave circles follows another from the point of disturbance to the remotest shores; so that from any other mountain top upon the globe any conductor which shall pierce this plane and receive the impression of such vibration, may be connected with an indicator, which will mark the length and duration of such vibration, and indicate by any agreed system of notation, convertible into human language, the messages of the operator at the point of first disturbance; and thus not only from one, but many mountain tops, piercing far above the circumambient atmosphere, the devotees of science and the solemn student of nature may gather the unwritten messages of interest or affection from the silent solitudes of nature and the cerulean depths of heaven with unerring accuracy, and transmit them to the dwellers of all lands by the mundane machinery to telegraphic instrumentalities.

In this connection it may perhaps be well to call attention to the invention of Mr. William Henry Ward, of Auburn, N. Y., for which patent No. 126,356 has been granted, and which is recorded in the last number of THE TELEGRAPHER, for "collecting electricity for telegraphing." Mr. Ward would seem to be taking an unfair advantage of Dr. Loomis in patenting the means by which his aerial telegraph is to collect the electric fluid from the "concentric circles" of the "circumambient atmosphere" above the highest mountain tops. Certainly they should unite their forces and gigantic intellects.

Not having the personal acquaintance of either of these eminent scientists, I cannot say that "much learning hath made them mad," but that they are unmistakably loony there can be no doubt.

After some further pleasantry on the part of various members, without acting on the bill the house adjourned. It is safe to say that if Dr. Loomis cannot try his experiments without the aid of a national act of incorporation, his chances of so doing are but slight.

Nothing further has been done in regard to the Hubbard postal telegraph corporation scheme.

CAPITOL.

A Safe and Reliable System of Train Despatching.

PENNSYLVANIA, May 18.

TO THE EDITOR OF THE TELEGRAPHER.

I HAVE noticed, with great interest, the articles on the American System of Train Despatching in THE TELEGRAPHER, some of which I very heartily endorse, in preference, at least, to that of "Hindoo," which is the most difficult and complicated system I have ever seen or heard of; and, as my friend Michigan says, I think the American railroads would lose more in trying to adopt that system than they could ever regain after having done so. In despatching trains I believe in having as few responsible parties as possible, and not to allow all the agents and despatchers along the line to take an active part in the work, otherwise than burying trains from their stations and yards after receiving their orders. I have had an experience of over two years in train despatching on a road which, I dare say, can boast of doing as large and successful a business as any road of its capacity in the country, considering the heavy grades and many other disadvantages under which we are compelled to labor. Our system of train despatching is, I think, one of the safest and most simple I have ever heard of; and, during my experience on the road, we have never had one accident which was caused through train despatching or a misunderstanding of orders. Train despatchers, operators, conductors and engineers are our responsible parties—train despatchers for the correct issue of orders; operators for the correct delivery of them, and conductors and engineers for the correct observance of them. And here I may say with pleasure that we have as good a set of operators, conductors and engineers, as you will find on any of our American roads. My division of the road comprises eighty-five miles of main line, with a daily number of twenty schedule trains each way and an average of fifteen irregular trains each way daily; also a branch eighteen miles in length, with a daily average of eight trains each

way, including schedule and irregular trains. From May 1, 1871, up to the same date this year, we issued 32,000 train orders—the highest number issued in one month being 3,000, and in one day 235. As I said before, our system is very simple. For an illustration we will suppose train No. 4 is a little late, and we wish to move it from from "A" to "B" against No. 3. We say to operator at "B":

"Do not allow No. 3 — engine — to pass without orders. 11" (or how do you understand?) with the train despatcher's signature to it. The operator, after receiving the order, immediately puts out his flag and then repeats his understanding to the train despatcher, and if right, he receives the word "Correct," with train despatcher's signature. We then say to C and E, No. 4 — engine — at "A":

"Run to 'B' regardless of No. 3 — engine —. 11." They both sign the order in train order book and on blanks, and after repeating the order to the train despatcher and receiving "Correct" from him, they are permitted to move. Should train No. 3 reach "B" before No. 4, we would simply give it an order not to pass there until No. 4 had arrived. We always make it a point to get orders to stations before the trains arrive there, and in this manner there is hardly a distinguishable detention to our trains in receiving orders. The rules and regulations governing our road are very good, and I doubt if a better set could be arranged. We sometimes issue time orders, but do not like them as well as an irregular order. I was very much amused at "Hindoo," in speaking of time orders, where he runs No. 1 into No. 2, in case No. 2 has not reached the stated point within her limits.

Time will not permit my further discussion of this important subject, however much I should be pleased to do so, but I hope soon to have the pleasure of attending a Train Despatchers' Convention, where we can all express our views, and mingling them together, adopt a system of train despatching which will serve to advance the interests, safety and prosperity of our roads.

H. W. J.

The Military Operators and the Proposed Land Grant.—Telegraphers Opposed to a Government Telegraph.—Telegraphic Items.

BALTIMORE, Md., May 29.

TO THE EDITOR OF THE TELEGRAPHER.

IN accordance with the recommendation of "Camp Lincoln" I wrote an appeal to Hon. John Ritchie to exert his influence in behalf of the late U. S. military operators. We, who so nobly and laboriously served the Government during the late war, have been completely overlooked and ignored. No corps of the army rendered greater or more faithful services than the telegraphers, and none were less rewarded or received so little appreciation. Every operator interested in pushing this matter to a successful issue must work with a vim, and we may, in all probability, accomplish our purpose. I am in receipt of a letter from Hon. John Ritchie, who says: "The bill to which you refer is now pending in the Committee on Military Affairs, and I have had it there referred to Hon. W. L. Stoughton, who was a General in the war. Hon. John Coburn, also a General, is chairman of the committee. It is all important for you, gentlemen, to address with what influence you can bring to bear on General Stoughton. One difficulty is the fact that the operators were simply sworn to secrecy, and were not mustered in as soldiers. I would advise you to speak to this point in any communication you may make."

Those interested I would advise to comply with Mr. Ritchie's advice, which I hastily do to-day. I hope the operators who are expecting to be benefited will use every effort at once.

The postal telegraph theme excites considerable comment among operators in general, and those who once favorably countenanced it now speak oppositely. We all see in a Government telegraph fraud and corruption by its projectors. The practical and brain worked operators of the whole country, as a majority, are in opposition to the Government manipulating that which it has no right to assume.

Business is not so active as it has been. The lines converging here, however, are doing fairly; in fact, the Franklin Company need additional wires to those just strung to accommodate its patrons and its large and increasing business. The W. U. have a large force employed here at present, and are said to be doing a heavy business.

BALTIMORE.

Cincinnati Industrial Exhibition.—Premiums for Electrical and Telegraph Apparatus.

CINCINNATI, O., May 20.

TO THE EDITOR OF THE TELEGRAPHER.

I AM advised that there will be offered by the Board of Commissioners of the Third Cincinnati Industrial Exposition the following premiums, which will be of interest to electricians:

For the best telegraph instrument, for private use, a silver medal.

For the greatest improvement in telegraphy, a silver medal.

For the best electric gas lighter, a silver medal.

For the best Lurglar alarm telegraph, a bronze medal.

This is believed to be the first instance in this country where the manufacturers of telegraphic machinery

have had an opportunity of competing for premiums for their workmanship, and for inventive skill, and it is hoped that the opportunity will be embraced by them to display their machinery in what promises now to be the largest exposition ever held in this country—not even excepting the World's Fair at New York Rules, &c., will be furnished, on application to the Secretary by mail. REPEATER.

Answers to Correspondents.

O'SHAUGHNESSY, N. O.—We do not think it best to publish your communication of May 21. Both sides have had a full hearing in the columns of THE TELEGRAPHIC, and we do not think any further personalities would interest our readers or serve any good purpose.

MARRIAGE NOTICES.—We cannot publish marriage notices unless the parties forwarding them give us their names, that we may be sure that they are O. K.

THOMAS, N. Y.—Operators' salaries range from \$25 to \$100 per month, according to ability and experience. You had better apply to the superintendent of some railroad line running out of the city, either in New Jersey or Long Island.

Personals.

Mr. SORELLE PEARSON, receiving clerk of the Pacific and Atlantic Telegraph Company's Philadelphia, Pa., office, has been ordered to Chicago, Ill., to assume the duties of cashier of that office of the same company.

Mr. J. NORTHCOTE has resigned his position with the Dominion Telegraph Company at Bowmanville, Ontario, and accepted a position in the train despatcher's office of the T. G. and B. R. R. at Toronto, Ontario.

Mr. J. B. SULLIVAN, formerly of Frederick, Iowa, has been appointed operator and assistant ticket agent of the Chicago, Burlington and Missouri River Railroad at Omaha, Nebraska.

Mr. C. M. TOWNE has resigned his position at Bevier, Missouri, and accepted a position on the Kansas City, St. Joseph and Council Bluffs R. R., at Weston, Missouri.

Mr. JOHN AGUE, formerly night operator in the Western Union office at Rochester, N. Y., has accepted a position on the day force in the A. and P. office at Buffalo.

Mr. C. M. FROST, late of the W. U. Buffalo, N. Y., office, has accepted a position in the Atlantic and Pacific office in that city.

Mr. GEORGE WARREN, formerly connected with the American and Western Union offices in this city, and more recently night editor of the *Buffalo Courier*, has accepted a position with the Atlantic and Pacific Co. at Buffalo, N. Y.

Mr. F. B. RAE, formerly with the Western Union Co. at Albany, has taken a position with the A. and P. Co., in the same city.

Mr. CHARLES E. BRIDGEMAN has accepted a position with the A. and P. Co., at Albany, N. Y.

Mr. B. W. BARNARD is acting as night manager of the A. and P. office at Albany.

Mr. T. J. SMITH, has been transferred from the Chicago, Ill., to the Rochester, N. Y., office of the A. & P. Telegraph Co.

Mr. C. C. HENRY, formerly of Western Union office at Fort Plain, N. Y., has been appointed manager of the A. and P. office at Saratoga, N. Y.

Mr. A. M. YOUNG, formerly of the A. and P. office at Fort Plain, N. Y., has been appointed assistant operator in the Saratoga, N. Y., office of the same company.

Mr. H. F. MERRIMAN has taken charge of the new office just opened on the N. Y. and O. Midland line of the Atlantic and Pacific Co., at Middletown, N. Y.

Mr. FRANK L. POPE has been elected a member of the London Society of Telegraph Engineers.

The Telegraph.

The New Cotton Exchange and the Southern and Atlantic Telegraph Company.

THE Southern and Atlantic Company have fitted up and opened a very handsome telegraph office in the basement of the new Cotton Exchange, at the corner of Hanover square and Stone street, and which is occupied jointly by them and the Franklin Company. The office is very elegantly fitted up, and presents an attractive appearance. It contains six instruments, and, by arrangement with the Franklin Company, works two wires direct to the important Southern cities. The office is in charge of Mr. Wm. McGibney, formerly of the W. U. office at the Grand Central Hotel, in this city, assisted by Mr. Irving S. Fitch.

The Southern and Atlantic Company are exhibiting a great deal of energy and enterprise in the management of their business. A system of weather reports has been organized, by means of which dealers in cotton in this city are daily informed of the condition of the weather at all points reached by this company's lines, and are thereby enabled to speculate upon the prospective condition of the crop of their favorite staple.

Good insulation is of more importance near the extremities than in the centre of a circuit, where two or more wires are on the poles.

The New Western Union Telegraph Building.

THE new building which is to be built by the Western Union Telegraph Company, at the corner of Broadway and Dey street, in this city, is to be an imposing affair. The building will be of brick, eight stories high, with a front on Broadway of seventy-five feet, and extending down Dey street one hundred and twenty-five feet. It is to have two entrances—one on Broadway and one on Dey street, with staircases leading to the upper stories. An elevator will also be placed in the building. The building will afford ample accommodation for the immense and rapidly increasing business of the company, and also furnish a large amount of office room, to be rented to other parties. The company propose to occupy the basement and portions of the second, third, fourth and fifth stories, and the whole of the seventh and eighth stories. The remainder of the building will be rented for other purposes.

The cost of the building is estimated at \$500,000, and the site cost the company \$850,000.

The Western Union Company has placed in London a loan of £300,000 (\$1,500,000), which was authorized at a special meeting of the stockholders a few weeks since, to provide for the cost of this magnificent structure, and the preparatory work will commence about the 15th inst. It is expected that it will take nearly two years to complete and fit up the building for the occupancy of the company.

Fatal Accident at the Western Union Telegraph Office.

ON Friday of last week Thomas Williams, a messenger boy in the employ of the Western Union Telegraph Company, fifteen years old, fell through the hatchway on the premises of the company at 86 Liberty street in this city. He fell from the third story, and suffered a compound fracture of the skull and other injuries. He was removed to the Centre street Hospital, where he died on Sunday last.

Foreign Telegraphic Notes.

ADVICES from Australasia to April 14th have been received at San Francisco, California, by the arrival of the mail steamer. Chairman Brisbane, of the Victoria Chamber of Commerce, is urging the Government to operate in guaranteeing the interest on another submarine telegraph cable to India.

In South Australia gold has been discovered by the telegraph construction party in the Northern Territory; but work in that section has been stopped on account of the floods.

In New Zealand telegraph communication from Auckland southward is now complete.

Lord Henry Lennox has given notice in the British House of Commons that on the 31st of May he would move "That a Select Committee be appointed to examine and report on the practicability of reducing the rates of telegraphic messages to India, to the colonies and to the United States; and of increasing the number of telegraph stations for the service of the Royal and Mercantile Marine; and of completing and improving the postal telegraph system of the empire by the purchase of the existing lines of submarine cables."

A telegraphic despatch received in London from Australia states that, on the Australian telegraph, "Work progressing rapidly; weather favorable; line will be completed from Port Darwin to latitude 17°, or 30 miles south of Dalywater's, in five weeks; completed from Port Augusta to Attack Creek (lat. 19° S.) in March; horse express will bridge our gap (140 miles, with relays of horses every 30 miles, occupying two days; strong force concentrated; will complete line end of July."

Total number of messages forwarded from Postal Telegraph stations in the United Kingdom during the week ended May 11, 1872, was 280,159—an increase over the corresponding week of last year of 62,084.

A new line of telegraph has been completed by the Post-office between London and Lowestoft. In some of the towns through which the line passes the wires are carried on iron poles of a new and ornamental pattern. The main object of the line is to afford increased communication between London and the Continent.

Telegraphic Brevities.

THE statement that has found currency in a portion of the Western press, that the river reports of the Signal Bureau were to be discontinued after the first of June, is not correct. In fact, they are to be materially improved, so as to render them of greater value to the river interests than heretofore.

Shaw's block in Biddeford, Maine, in the lower story of which was the office of the International Telegraph Company, was burned down on Sunday evening last.

A GENTLEMAN recently married in Chicago presented his bride at the wedding with the original transcript of one of the first despatches ever sent over the first telegraph line from Baltimore to Washington. It was the announcement to the lady's grandmother of her birth, and read, "Only a girl."

The Atlantic and Pacific Telegraph Co.

WE are informed that the Atlantic and Pacific Telegraph Company are engaged in making thorough repairs of the lines between this city and Albany, and it is intended, during the season, to carry out this policy on all the lines of the Company, so as to put them in complete order for the very large and rapidly increasing business which is pressing for accommodation.

A new wire is about to be put up by this company on the present line between Dayton and Cincinnati, Ohio, to give a second and through circuit from Cincinnati to Chicago, and east of the latter city.

The work on the two new wires which are being erected upon the Midland railroad is progressing vigorously. The material for these wires has nearly all been distributed on the route, and the work is being pressed forward as rapidly as is consistent with the roughness of construction.

An exclusive connection has been made with the American Telegraph Company, which has lines from Detroit, through Lansing, to Howard City, Mich., and which proposes, ultimately, to reach all important points in the State of Michigan. This company has already about twenty offices.

An exclusive connection has also been formed at Buffalo, N. Y., with lines on the Buffalo and Philadelphia Railroad, which now extends from Buffalo to Olean, N. Y., and is rapidly being pushed forward to Emporium, Pa.

An exclusive connection has also been made at Saratoga, N. Y., with the Adirondack Company's telegraph, which extends for about seventy-five miles into the Adirondack regions, and which will eventually reach Ogdensburg.

The Deseret Telegraph Company, which is also included in the A. & P. system, has seven hundred miles of telegraph line and sixty offices.

Other connections of minor importance have been effected, all of which are of more or less value, and extend and enlarge the Atlantic and Pacific system.

The business of this company is, this season, very large—far exceeding that of any previous year, and is rapidly increasing—fully occupying the facilities possessed by the company, and constantly pressing for additional accommodations—faster, if anything, than they can be provided.

Telegraph and Electrical Instruments.

WE would call attention to the card of Mr. W. HOCHHAUSEN, which will be found in our advertising columns. Mr. HOCHHAUSEN has gained a high and well deserved reputation for the excellence of the work done at his establishment—and having recently enlarged his facilities, by removing to more spacious quarters in the rear of 132 William street, is now prepared to execute orders for any kind of telegraphic or electrical machinery with promptness and in a satisfactory manner.

New Patents.

For the week ending May 7, 1872, and bearing that date.

No. 126,534.—PRINTING TELEGRAPH. Thomas A. Edison, Newark, N. J., assignor to Gold and Stock Telegraph Company, New York City.

1. Two type wheels, actuated by separate levers and step-by-step movements, in combination with an actuating electro-magnet armature and bolt that locks either of the levers with the actuating armature, substantially as set forth.
2. An electro-magnet for operating the locking bolt, in combination with the said levers, step-by-step movements, and type-wheels, substantially as set forth.
3. The latch for holding the bolt unlatched by the cam 3 upon the type wheel shaft, in combination with the armature and levers to actuate the type wheels, substantially as set forth.
4. The circuit closing springs *s* or *t*, separated by the non-conducting pin upon the type wheel shaft, in combination with an electro-magnet for directing the pulsation through that magnet when the pin is between the springs, substantially as specified.
5. The arrangement of circuit connections, substantially as set forth, for actuating either of three electro-magnets in one main telegraph line, for moving one of two type wheels and affecting the printing, substantially as set forth.

Married.

DUNWOODIE—FERGUSON.—At Sarnia, Ontario, on Monday, May 20th, at the residence of the bride's father, Mr. WILLIAM H. DUNWOODIE, operator of the Dominion Telegraph Company, Toronto, Ontario, and AGNES, youngest daughter of Mr. Wm. Ferguson, of Sarnia, Ontario.

HART—ARMES.—At Lawrence, Kansas, May 22, by Rev. John K. Dunn, rector of Trinity Church, CHARLES N. HART, manager of the Western Union Telegraph office in that city, to Miss LUCIE ARMES, only daughter of Mr. Frances Armes.

GAMWELL—TUTTLE.—On Thursday, May 23d, at the residence of the bride's parents, by Rev. James M. Tuttle, Mr. A. H. TUTTLE to Miss LOTTIE T., daughter of Mr. John N. Gamewell of Hackensack, N. J.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, JUNE 1, 1872.

The Telegraphic Prospects.

THE more we investigate the telegraphic situation the more apparent is it that telegraphy has entered upon a season of hitherto unprecedented prosperity. Never before were telegraph companies and lines enjoying so generally a profitable business, and this prosperity appears to be constantly and steadily increasing. The imperfect construction of telegraph lines in this country prevents the realization of the best possible results, but notwithstanding the defects of construction and insulation the business is progressing at a rapid rate, the value of telegraph investments is augmenting very materially, and, there is good reason to hope, permanently.

In spite of the costly teachings of experience the companies generally adhere to glass insulation, because the first expense of such insulation is nominally and comparatively less than that of improved insulation. A better quality of wire is more generally used than heretofore, and more attention is paid to securing good conductors. The wire of JOHNSON & NEPHEW, of Birmingham, England, sold by L. G. TILLOTSON & Co., and the CHESTER wire, advertised and sold by C. T. CHESTER, are the favorites, and most justly so. No telegraph wire is made in this country that can compare with those brands, and even with the outrageous duties imposed upon foreign wire American manufacturers cannot compete with them successfully, because of the inferior quality of their productions.

Of the merits of the JOHNSON wire the readers of THE TELEGRAPHER are well informed, and we hear most excellent accounts of the CHESTER wire. Those who have used it speak most highly of it, and consider it, in some respects, superior to any heretofore offered in this country. It is not matter of surprise, therefore, that TILLOTSON and CHESTER are obtaining a monopoly of the market for iron telegraph wire.

To the improved character of the conductors used is to be ascribed no small part of the improvement in the financial results of telegraphy. If this were supplemented by the general adoption of improved insulation, the improvement would unquestionably be still more marked. The Western Union Company, under the guidance of incompetent officials like General Superintendent ECKERT, persist in using inferior glass insulation, and the example of this great telegraphic organization is, of course, considered sufficient warrant for the smaller companies to adhere to this relic of telegraphic barbarism.

In view of all the facts, and of the progress, slow it is true, towards a better class of lines, with greater relative capacity for business, the telegraphic prospects may be considered most encouraging. There is not the tendency which existed a few years since to inaugurate new and uncalled for telegraphic enterprises; and it is not impossible but that at no very distant day the telegraphic companies may crystallize into two powerful organizations, which shall compete for the telegraphic business of the country, and, through such competition, afford the protection needed by the public against telegraphic monopoly. Nothing short of this will satisfy the public. Experience has proved that a telegraphic monopoly will not be submitted to by the public, at least if administered and enjoyed by a private corporation. If a telegraphic monopoly should at any time become inevitable, then the demand for the Government to take the lines and carry on the business would be irresistible. For this reason the proposition of Mr. GARDINER HUBBARD that Congress shall confer upon his proposed Postal Telegraph Company a practical monopoly of the telegraph business of the country, meets with little popular support.

The increase of the telegraph business and the extension of the lines has created a demand for good

first class operators which it is difficult to supply. There are plenty of operators, such as they are, but not of the best class. If the demand continues, salaries of such must advance again, for the law of supply and demand is as imperative and certain in telegraphy as in all other branches of business. It is, therefore, advisable for all who design to make telegraphy their permanent employment to qualify themselves thoroughly for first class positions—and, with proper organization among themselves, they cannot fail to command proper and remunerative compensation. It is a business which should, in the more responsible and important positions, command a high order of talent, and which should be able to compensate it properly and sufficiently. That it can do this there is no question, for in telegraphy, as in every other business, the educated and skilful laborer, at the higher rate of compensation, is, in the end, the most profitable.

It gives us pleasure to record the excellent and brightening prospects of the telegraph business, and we still hope and expect that the telegraphic employes will share in the prosperity to a greater extent than they now do. If Congressional interference can be prevented there is a bright future before the telegraph companies, and one which will compensate, to some extent, the sacrifices and losses which have so generally attended investments in telegraphic property. With the people satisfactorily served, and the telegraphs prosperous, there would seem to be but little excuse for Congressional interference against the opinions and desire of any considerable portion of the people. As a matter of fact, the prospect of its doing so has heretofore been so small that there has been but little consideration of the matter on the part of the public, but it is unquestionably true that the most earnest efforts of the few advocates of a Governmental control and management of the telegraphs have failed to elicit any favorable response. Mr. HUBBARD has spent years in trying to work it up, and other parties, including such high officials as the Postmaster-General and the President of the United States, have favored and advocated it, but, up to the present time, with but little effect. The business public and the people—those who use the telegraph—are almost unanimously opposed to the idea of Government management and control of this great and vital interest. Until they shall demand Government interference committees may report favorably, and individual members of Congress may advocate it, but the telegraph interests of the country will remain unconnected with the Government machinery.

The Page Patent.

WE are informed that the Western Union Telegraph Company has commenced a suit against the New York City Government for infringement of the PAGE patent in its Police Telegraph instruments. The Deseret Telegraph Company of Utah has also been notified that its instruments infringe the patent, and called upon to render an account of profits, etc. It would seem from this that the Western Union Company is disposed to test the validity of that patent, but will do so by test suits against others than leading competing telegraph companies.

We have given much attention to this patent, and are satisfied that it is without validity or value in its application to telegraphic apparatus. It can in no case be enforced except after a favorable decision in the highest court of the country. The interests affected by it are so immense and general that it must be opposed and contested to the last extremity. If its validity is established, it gives to the Western Union Company a practical monopoly not only of telegraphing in this country with instruments now in use, but also of the manufacture of telegraphic apparatus.

There should be an immediate and thorough combination at once of all the interests affected by it, and the enforcement of this most extraordinary patent be mutually and jointly resisted.

In this connection it should be remembered that, after a thorough examination of the validity of the patent by the highest legal talent and by experts, the patent was rejected once by the Western Union Company, to whom it was offered by the legal representatives of Prof. PAGE's estate for purchase, first for a half million dollars, and subsequently at fifty thousand

dollars, as utterly worthless. Subsequently it was decided to purchase one half of the interest in, with the control of the patent by that company, for which twenty-five thousand dollars was paid, in the belief that its possession would aid in the management of railroad telegraph interests, and that it might be used more or less effectively in contests with other telegraph companies, even if it should finally be declared invalid. We would suggest that the parties in interest effect an organization among themselves for the purpose of jointly contesting any effort that may be made to enforce so monstrous a perversion of what was intended by Congress to be merely an honorary and complimentary act towards a distinguished scientific American citizen.

A New Telegraph Line.

A NEW telegraph line has just been completed on the north shore of Long Island, extending from Glen Cove, Long Island, to Brooklyn and New York city, where it connects with the Atlantic and Pacific Telegraph Company. This line is owned and operated by the North Shore Telegraph Company of Long Island, and was opened for business on Friday of last week.

This portion of Long Island has long been in need of telegraphic facilities, and some of the more public spirited citizens, a few months since, inaugurated a movement for securing the construction of a line which has resulted as above stated. This line has been built in the most thorough and substantial manner, and will be vigorously and effectively maintained by the people. Additional offices will be opened at the Pavilion Hotel, at the steamboat landing at Glen Cove, and at the new Methodist camp ground, which is now an assured brilliant success. Other offices will also be opened from time to time upon the line and the extensions to be made to it during the season.

The people of Glen Cove and vicinity are highly elated at the completion of this line, against the opposition and efforts of one or two prominent but unpopular citizens of that village.

After arrangements had been made for the construction of this line, the Western Union Company, under the inspiration of the parties referred to above, proceeded to build a line to Glen Cove for their accommodation—so that now that locality is favored with two lines of telegraph, but one of which is needed or will receive public patronage.

The Editors of The Telegrapher Generously Remembered.

As will be seen by reference to the marriage notices in this number of THE TELEGRAPHER, Mr. A. H. TUTTLE has been united in marriage with Miss LOTTIE, the daughter of Mr. J. N. GAMEWELL, senior proprietor of the American Fire Alarm Telegraph system. The liberality which characterizes the bride's father was manifested on this occasion by the presentation to the Editors of THE TELEGRAPHER of an entire wedding cake, of generous proportions, which was left at our office with the marriage notice—for which we return our thanks.

We have tested the cake, and find it of a most excellent quality.

We congratulate the bridegroom upon his good fortune in securing a life partner whose personal and mental charms will prove a blessing to him through life. The parties have our best wishes for their future prosperity and happiness.

A Good Appointment.

Mr. HENRY J. ROGERS, a well known telegrapher, and the oldest, we believe, in point of experience, of any now connected with the service, has recently been appointed Engineer of the Southern and Atlantic Co., and is busily engaged in getting matters all along the line into thorough working condition. This enterprise is in the hands of experienced and well known capitalists and business men, some of whom have long been connected with the telegraphic interest of the country, and its future prospects are certainly very encouraging.

ALFRED VAIL proved, by an experiment upon Morse's first line between Baltimore and Washington, in 1844, that it was possible to operate the telegraph that distance with the current generated by metallic plates buried in the earth at each terminus.

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The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

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FIRE ALARM & POLICE TELEGRAPH,
WITH A CENTRAL OFFICE,
OR
UPON THE AUTOMATIC PLAN,**

is now in operation in the following Cities, to which reference is made for evidence of its great

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Charlestown, Mass.,	Providence, R. I.,
Covington, Ky.,	Quebec, L. C.,
Detroit, Mich.,	Rochester, N. Y.,
Dayton, Ohio,	Richmond, Va.,
Elizabeth, N. J.,	St. Louis, Mo.,
Fall River, Mass.,	St. John, N. B.,
Fitchburg, Mass.,	Springfield, Mass.,
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Louisville, Ky.,	Troy, N. Y.,
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ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

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Only **PERFECT, COMPLETE and RELIABLE** System

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems.

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that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

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the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original **FARMER & CHANNING PATENTS**, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

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The most important improvement which the Proprietors have adopted and introduced is the

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the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

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ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION of CANADA,

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Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

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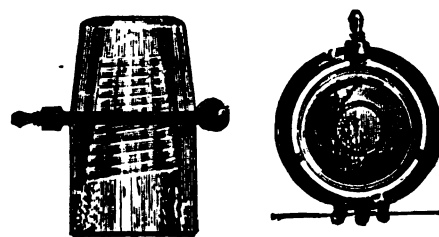
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Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

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The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

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As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

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5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from spits, being sufficiently tested.

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In other specifications a breaking strain of 1,260 pounds or No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

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The capacity or endurance of No. 9 is 21 to 23 TWISTS UPON ITSELF in six inches of length, after having been subjected to the two per cent. of elongation.

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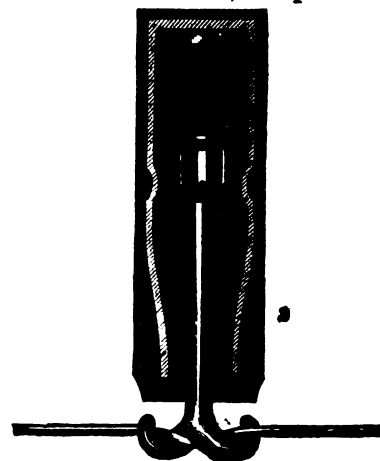
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Apparatus manufactured by

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The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 42.

New York, Saturday, June 8, 1872.

Whole No. 308

Laws of Volta Induction.

1. In a secondary closed circuit the excited induction current is proportional to the current strength in a primary circuit.

2. The induction currents arising from the action of a galvanic current upon itself are, both on breaking and making the circuits, equally great, so long as the inducing current strength remains equal.

3. When a metallic closed circuit and a conductor, through which an electric current is circulating, are either brought nearer each other or separated, a current is induced in the metallic closed circuit. This current is in the reverse direction to that which would have been necessary to effect the approach or separation of itself.

4. The electro-motive force which a magnet excites in a helix of wire is, *ceteris paribus*, proportional to the number of convolutions of the wire.

5. The electro-motive force which a magnet excites in a surrounding helix is equal, whatever may be the radius of the coil; therefore, the currents induced in the different rings of wire are inversely proportional to their diameters.

6. The electro-motive force excited by a magnet in a helix of a given number of turns is the same, whatever may be the thickness or conducting power of the wire.

7. The strengths of the induction currents in different spirals of equal number of turns are proportional to their conducting power.

8. The larger the connecting wires are so much more numerous should be the convolutions, in order to obtain a maximum current.

9. The more turns which can be put next to each other, close by the magnet or magnetized armature, the fewer turns will be necessary to give a maximum current.

10. The maximum of an induction current is proportional to the strength of the inducing magnet.

11. The retardation of the development of magnetism in soft iron cores which are wholly covered by helices, depends principally upon the opposite currents induced in the helices themselves. The magnetism of the simultaneous currents induced in the periphery of the core, and the coercive force of the iron, are of less influence.

12. The retardation of the disappearance of magnetism from soft iron cores which are wholly covered with galvanic helices, depends, however, principally upon the formation of currents in the periphery of the soft iron cores.

13. The retardation of development and disappearance of magnetism in soft iron cores which are only partially covered with helices, depends principally upon the magnetic inertia of the iron.

The Government Telegraph and the Western Union Telegraph Company.

ONE of the happy results attending an early adjournment of Congress will be the pigeon-holing of half a dozen or more measures which leviathan lobbies have been urging during the past winter. Of these it is to be hoped that the Hubbard postal scheme will be permitted to drop out of sight altogether.

It was introduced by visionary schemers, pressed by a lobby whose motive was the hope of securing some of the public offices which it would create, and recommended by a Senate committee which had evidently only half considered the measure. There is every reason to believe that the charge of the Western Union Telegraph Company, that the committee did not call on its officers for any information concerning the business and operations of the existing lines, or for any facts in relation to telegraphy in general, is true, although there is no better source of information concerning such affairs. The committee admitted that "the Western Union performs nine tenths of the telegraph business, and fairly represents the telegraph system of the country." In view of this, it is but natural to suppose that the committee had no desire to collect facts, and considered that the passage of its measure could be better procured without them.

The experience of Governmental interference with the affairs of private corporations has been a dear teacher, whose lessons are directly opposed to such a

venture as the Hubbard scheme proposes. The theory may be attractive enough, but its practical application cannot be made successful until a millenium influence rules the world. In this instance it is not at all probable that the Government could for years transact the telegraph business of the country as carefully as the men who have made it a life work are now doing, or with the cheapness that the competition of two or three lines now secures. While these benefits would be doubtful, there would be a certainty of new impediments in the way of civil service reform that would indefinitely retard its accomplishment.

How well the Western Union Telegraph Company is doing its work may be inferred from what it has done in the vicinity of St. Louis during the past two years, under the supervision of Colonel R. O. Clowry, the Superintendent located in St. Louis. The St. Louis department embraces Missouri and Kansas, and the parts of Colorado, Iowa and Nebraska tributary to St. Louis. In this territory 3,915 miles of new wire have been stretched, 2,486 miles of new poles have been erected, 1,351 miles of wire have been transferred to new poles, and 166 new offices have been established. The work, remarkable as it may seem, does not end here, but is being pushed forward at the same pace. A company that proceeds with such rapid strides is accomplishing a mission that the Government has no right to take out of its hands.—*The Missouri Democrat*.

A Telegrapher Crushed Beneath a Train on the Louisville and Nashville Railroad.

MR. JOHN R. FRANK, the night operator at Colesberg, a station thirty-four miles from this city, on the Louisville and Nashville railroad, met with a sudden and most horrible death at one o'clock yesterday morning. He was returning from a visit to Elizabethtown, and riding in the caboose with conductor Ernest Whittington, of freight train No. 8. The conductor got on the top of the train and started to walk to the front end. Mr. Frank attempted to follow him, and passed over several cars, but while crossing from the fourth to the fifth car the lamp held by Mr. Whittington suddenly disappeared, and Frank fell head foremost to the ground, where the whole of the cars passed over him. The train was stopped as soon as it was possible, and the conductor went back to the assistance of the unfortunate and fearfully mangled but still living and conscious man. The trucks passed over his hips, legs and arms, and cut him on the stomach so that his entrails protruded. Notwithstanding this fearful condition the poor fellow was perfectly conscious, able to converse fluently, and actually related the whole circumstances of the accident. He was taken to Colesberg and attended by Dr. Combs. The unfortunate man was suffering so that he implored those around him to take his life. He said that death would relieve him of a great deal of agony and rob him of very little time. The doctor administered chloroform, but under the circumstances the medicine would have no effect.

Mr. Frank told those who were near to telegraph to his mother at Kenosha, Wisconsin, and inform her that he had been killed. He died about two hours after the accident.

The officers of the road purchased a fine metallic coffin, placed the remains of the unfortunate man in it, and forwarded them last night to his mother at Kenosha.—*Louisville, Ky., Courier-Journal*.

Action of the L. and N. Railroad Telegraph Operators upon the Death of Two of their Brother Employees.

A MEETING of the employees in the telegraph department of the Louisville and Nashville Railroad was held Monday, May 27th, to take suitable action on the death of two members of the fraternity, employees of the road.—Mr. Leander Greist, of Mumfreville, who deceased March 28th, from spino-cerebro meningitis, and Mr. John R. Frank, of Colesberg, who was crushed to death under a train of cars on the morning of the day of the meeting.

The business of the meeting was transacted over the wire.

Mr. Edward Marsh was made chairman. He ap-

pointed a committee to draft suitable resolutions, whereupon the following were transmitted over the line, and the concurrence of all the operators received by the usual telegraphic signal of O. K.:

Whereas, It has been ruled by an Allwise Providence that two of our fellow craftsmen and brother operators should be removed from our midst to "that bourne from whence no traveller returns;" therefore, be it

Resolved, That we mourn their loss as good and worthy men, highly respected and loved by all, and that we feel that our loss is their gain—their earthly labors ceasing with the death stroke, as if a flash had ignited the electric spark to guide their souls to their future resting places.

Resolved, That we tender our condolence to the stricken families of both deceased, and join our sympathies with their tears, in token of the sad bereavement we feel.

Resolved, That a copy of these resolutions be sent to the families of both, and to the *Journal of the Telegraph*, *THE TELEGRAPHER* and the *Courier-Journal* for publication.

G. H. CARPENTER,
G. L. SPINK,
J. H. BARD, } Committee.

Miscellaneous.

ACOUSTIC TELEGRAPH.—Professor Weinhold, of Chemnitz, Germany, has invented a phonic telegraph, employing neither electricity, magnetism, light nor heat. The wire, which must be very carefully insulated, is attached at both ends to sounding boxes. Words uttered near one sounding box are repeated by the other very distinctly. This telegraph has been found to work well on the short line (2,200 feet long) where the experiment was made.

NEW ARRANGEMENT FOR A CONSTANT BATTERY.—M. Kohlurst has devised an arrangement of a copper and zinc battery somewhat similar to the Meringer gravity battery, which he states will, if used for ringing electric bells, give a constant current for a year at the cost of 1½ lbs. of crystals of sulphate of copper. A truncated hollow cone is thoroughly varnished inside, filled with crystals of sulphate of copper, and placed mouth downwards in a glass jar deeper than itself. This cone has notches round the rim, and has a small hole in the centre at the top. The positive pole is a thick cake of zinc, suspended over the face of the cone; it is cast with a hole in the centre, through which passes a gutta-percha covered wire, which is connected with the upper cone. The glass cylinder is filled with water, and it is evident that the rate of solution of the sulphate of copper depends upon the facility with which it is dissolved by the access of water through the notches in the cone; and as this takes place at a uniform rate, the current given by the battery is uniform also. A dilute solution of sulphate of magnesia or common salt may be used instead of plain water, if it is required to diminish the internal resistance of the battery.

ELECTRIC GAS LIGHTING.—In order to insure, as far as possible, the safety of the gunpowder works at the Royal Arsenal, Woolwich, England, the gas lamps are in future to be lighted by means of electricity. This process has already been adopted at the cannon cartridge factories and several other workshops, where the quantity of explosive material is necessarily large, and it is understood to be intended to apply this system to all the buildings in the Royal Arsenal where work of a similar nature is carried on. The whole of the lamps by which these workshops are lighted are invariably fixed outside the windows, and open only on the outside of the building; but it has been thought that lighting them by the ordinary means is nevertheless attended with danger, and their ignition by wires in connection with a galvanic battery will be the means of insuring greater security against accidents.

RAILROAD SIGNALS.—Twenty-five cent diamonds are becoming so plenty among railroad brakemen that they are compelled to wear a piece of carpet over their shirt bosoms after dark to avoid giving lantern signals when moving about at stopping places.—*Cleveland Leader*.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

The Student Question.—A Reply to Jack Brown.

TORONTO, May 20.

TO THE EDITOR OF THE TELEGRAPHIC.

I NOTICED an article in THE TELEGRAPHIC of May 11th, over the signature, "Jack Brown, Student," which does not altogether harmonize with my feelings, and as you have received some communications from me on the subject, I would ask the favor of space in your journal to endeavor to remove the impression from the minds of all students that it is the desire of operators to wholly debar any from learning the art. Such, I would beg to say, is by no means the aim or object we have in view in forming a "Union."

The object, as has before been explained, is to confine students to a certain class. Operators (such as they are) are becoming so plentiful that wages are reduced to a mere fraction of what they should be; and as those uneducated and half taught students are willing, yea, glad to work for such low wages, it is altogether out of the question for qualified operators to demand an increase.

Those whom we, as "Brown" says, "contemptuously" term "plugs" are not students, but that class I have just made reference to, who are becoming alarmingly abundant. Another reason why we deem it advisable and necessary to form a Union is to prevent those whose education is altogether unsuitable for them to attempt to learn.

I regret, and I am sure all operators do, that any student who has a good education should, for a moment, rest under the impression that we are trying to monopolize the business, even for the present. Such is not our ambition; we wish to see operators respected, and treated as becoming men of good social standing—not considered as, alas! they are in many places at present, the rejected of all offices of responsibility and trust.

It is hoped that this explanation may induce "Jack Brown" to slightly change his opinion of the fraternity, and that we shall hear from him again in a better cause.

CANUCK.

The Land Grant to Military Telegraph Operators.

WASHINGTON, D. C., June 3.

TO THE EDITOR OF THE TELEGRAPHIC.

I RESPECTFULLY suggest to military operators that the writing of letters to members of Congress, urging favorable action on the Bounty Bill pending before the House Military Committee, is likely to do more harm than good. The operators who came here, ostensibly to present the subject to Congress, secured an appointment for a hearing by the committee but failed to keep it, and it is now too late to accomplish anything this session. The matter should be placed in the hands of a committee of telegraphers who can collect all necessary facts, arrange them in an intelligible shape, and submit the case to Congress next winter. If properly managed success is probable.

MILITARY.

Telegraphic Notes and Notions.

KANSAS CITY, Mo., May 21.

TO THE EDITOR OF THE TELEGRAPHIC.

IT has occurred to me that it might interest the readers of THE TELEGRAPHIC to hear from this section of the country, and I have, therefore, concluded to send a communication for your columns.

The Western Union Telegraph Company have recently moved their office in this city to the first floor of the building directly under the old office, and have fitted it up in a very handsome manner, making it much pleasanter for the employees and more convenient for the customers. A better managed office cannot be found, and, were the wires tested, I think they would be found to be in excellent condition, and with as little resistance as could be expected. The wires are run under the floor, as is usual in large offices, and I never saw an office where the wires worked as well and steadily, more especially as regards the "locals." The credit for the excellent arrangements of this office is due to T. P. Cook, Esq., the popular assistant superintendent of the district, and Mr. M. D. Wood, the efficient manager of the office.

The Great Western Company have moved their office, so as to be directly opposite the Western Union, hoping, as it is understood, to gain business by their location. This would seem to indicate very great weakness on the part of that company. That company have been unfortunate in their managers here since their office was opened—the managers not having been of the wide awake, enterprising character, such as a new enterprise would seem to require to secure the best results.

Mr. C. M. Hart, of the Lawrence, Kansas, office, leads one of the fairest daughters of that beautiful city to the hymenial altar to-night. May success and happiness ever be their lot, is the sincere wish of their many friends, as well as of your correspondent.

I shall endeavor to raise a club of subscribers for "our paper," and send you soon a second list, to prove that THE TELEGRAPHIC is practically appreciated by the telegraphic fraternity in this part of the country.

HILL CITY.

Telegraphic Law Suits.

PHILADELPHIA, May 27.

TO THE EDITOR OF THE TELEGRAPHIC.

A SUIT of considerable interest to telegraphers has recently been tried in this city before Judge Briggs.

The Pacific and Atlantic Telegraph Co. brought suit against A. J. Baldwin to recover an alleged overpayment on account of salary and expenses of the defendant while General Superintendent of their company. The case was on trial three days. The judge charged the jury in favor of the defendant, when the telegraph company took a non-suit and paid the costs just as the jury were about to retire for deliberation.

Mr. Baldwin immediately brought a suit against the telegraph company, and it will come up in due course of time.

LEGH.

What I Know About Telegraphic Blowers.

TO THE EDITOR OF THE TELEGRAPHIC.

EVERY actor in the drama of life has some distinct part to play—some part which, above all others, distinguishes him from his fellow actors. Thus, we see some people act the character of a fool, others that of a fraud, and some represent the character of a blower.

Passing by all other shades and grades of fools, frauds and blowers, permit me to say two or three words about the telegraphic blowers.

I know several of them. Their conversation is entertaining and instructive, albeit it lacks the essential requisite of variety.

They will entertain you with instructive statistics on the number of messages they received without a break, and instruct you with an entertaining account of how they made some luckless individual say "Please write slower." They will also give you thrilling accounts of how they had to "scratch gravel" when some "salter" was "salting" them, etc., *ad nauseam*. They make as free use of salt as the packers in a pork house.

Notwithstanding all that can be said against the blower it must be admitted that he serves at least one good purpose. He stands head and shoulders above all other nuisances as the representative of a class that ought to be avoided, and, therefore, we can take warning by his pernicious example, and direct our conversation into a higher and a nobler channel than that in which the blower blows.

Least, perchance, I become liable to the soft impeachment of being a member of the order, I will now subside.

J. U.

Personals.

Mr. JAMES M. ARNOLD has resigned his position as operator with the Pacific and Atlantic Telegraph Company at Oil City, Pennsylvania, and takes the management of the Burlington, Iowa, office of the same company.

Mr. C. H. BOYNTON, formerly of Leavenworth, Kansas, but latterly of the Kansas City, Mo., W. U. office, has resigned, and accepted a situation at Reno, Nevada.

Mr. EDGAR L. TODD (an old timer at Kansas City, Mo.), recently of Cincinnati, Ohio, succeeds Mr. BOYNTON in the Western Union Kansas City office.

Mr. F. J. GATES, formerly of Sedalia, Mo., but latterly of the Kansas City, Mo., Western Union office, has been temporarily transferred to the Atchison, Kansas, office, and may remain there permanently.

Mr. M. C. MAHONEY, formerly of Hannibal, Mo., takes Mr. GATES' place in the Kansas City W. U. office.

Messrs. J. D. LONG and GEORGE W. IRWIN are the gentlemanly and efficient press report operators of the Western Union office at Kansas City.

Mr. D. W. KNAPP has resigned his position with the W. U. Co. at Cincinnati, Ohio, and accepted a position at Virginia City, Nevada, with the same company.

Mr. CHARLES ORTON has resigned his position with the Western Union Company at Cincinnati, Ohio, and accepted a position at Denver, Colorado.

Mr. J. E. HADLEY, formerly operator in stock office, Cincinnati, has resigned his position on account of ill health.

Mr. S. B. ROBERTS has accepted a position with the W. U. Co. at St. Louis, Mo.

Mr. W. MOORE has accepted a position on the day force of the W. U. Cincinnati, Ohio, office.

Miss JENNIE DUGANNE, for the past four years connected with the telegraph office in the Union Depot in this city, has accepted the management of the telegraph office at Middletown, Conn., and departed for her new home yesterday. Gentle, talented and unassuming, Miss DUGANNE has won many friends here, who will rejoice to learn of her prosperity, and unite in wishing her success. The people of Middletown are fortunate in securing her services.—Albany, N. Y., *Sunday Press*.

Mr. W. J. FANCHER has been appointed operator at Glen Cove, L. I., on the North Shore telegraph line.

On account of severe illness Mr. C. BREHLER has resigned his position with the Atlantic and Pacific Telegraph Company at Lockport, N. Y., and has retired from the business for the present, to seek health and rest in the country during the summer.

The Telegraph.

Comparative Test of Insulators.

WE have received the following statement of the results of a galvanometrical test of insulators made at Altoona, Pa., in rain, on the 10th of May, by Mr. William McCormick, of the telegraph department of the Pennsylvania R. R. The deflections were taken on a Siemens universal galvanometer with 100 cells Callaud.

CONSTANT OF GALVANOMETER.
(100 cells through 1,000,000 Siemens units.) 50°.

DESCRIPTION OF INSULATOR.	Deflection in degrees.	Resistance per insulator in millions of units.
10 old Pacific and Atlantic glass, on old tarred pins.....	50°	10
10 new P. and A., on new gas tarred pins.....	4°	125
10 rubber hooks.....	80°	6½
10 new Western Union, on new painted pins.....	10°	50
10 new Penn'a R. R., with Petruski filled pins.....	5°	100
10 old style Brooks (dirty).....	3°	250
10 old Brooks (re-bottled).....	0°	Infinite.
10 new Brooks (screw shank).....	0°	"

The Great Eastern Cables Consolidation.—Final Reports and Dividends of the Several Companies to be Consolidated.

ANGLO-MEDITERRANEAN.—The report for the eleven months ending the 31st of March last states that from that date the arrangement for the amalgamation of this company with the Falmouth, Marseilles and British-Indian Submarine Telegraph Companies was proposed to take effect. The working charges of the company had been considerably reduced, chiefly owing to the arrangements by which the company had been relieved for a considerable period from the cost of maintaining and working a special line through Italy, and in consequence of the cancellation of the lease of the old Government Malta and Alexandria cable. It was proposed to appropriate £59,125 of the net balance on the eleven months' working to pay a dividend at the rate of £15 per cent. per annum, free of income tax, or £13 15s. for the eleven months; of this amount £56s. 8d. had already been paid, leaving a balance of £8 8s. 4d. per cent. to be now distributed. The balance, amounting to £4,005, was carried to the reserve fund for repair and maintenance of cables, which was thus increased to £7,905. The directors had carried out the arrangement with the Telegraph Construction and Maintenance Company with regard to the Levant lines and concessions, and had paid the £50,000 in respect of the purchase money upon the conditions required by the meeting held in February last. The expenditure on capital account amounted to £436,861.

BRITISH INDIAN.—The report states that the gross receipts of the company for the six months ending March 31, 1872, less the loss on exchange from India, amounted to £80,479, and the expenses, including income tax, to £19,482, leaving a balance of £60,997. The directors have already paid an interim dividend of 2 per cent. for the quarter ending December 31 last, and they now propose to pay 2½ per cent., free of income tax, for the quarter ending March 31—being, with the previous payment, a total dividend at the rate of 9 per cent. per annum on the capital—and to carry the balance, £7,559, to the reserve fund, which is thus increased to £19,060. Since the last meeting the directors of the Anglo-Mediterranean Company have carried out the arrangement authorized at the meeting of their company in February last, for the purchase of the concessions and lines in the Levant and Adriatic which were referred to at the last meeting of this company, and have paid a deposit of £50,000 on account of the purchase money. The agreement thus entered into will, on the amalgamation, be transferred to the new company.

FALMOUTH, GIBRALTAR AND MALTA.—The report for the half year ending March 31, 1872, thus refers to its progress: "The company's revenue for the six months amounted to £46,248 and the working expenses to £12,979—leaving a balance of £33,268. The directors have already distributed an interim dividend of 2 per cent. for the quarter ending December 31 last, and they now recommend the declaration of a dividend of 2½ per cent., free of income tax, for the quarter ending 31st March—making, with the previous payment, a total for six months, at the rate of 8½ per cent. per annum; and they have carried to the reserve fund the sum of £968—making, with the previous balance on that account, a total of £9,866. Since the last meeting the directors of the Anglo-Mediterranean Company have carried out the arrangement authorized at the meeting of their company in February last for the purchase of the concessions and lines in the Levant and Adriatic, which were referred to at the last meeting of this company, and have paid a deposit of £50,000 on account of the purchase money. The agreement

thus entered into will, on the amalgamation, be transferred to the new company.

MARSEILLES, ALGIERS AND MALTA.—The report for the three months ending March 31 has been issued, in which it is stated that the revenue for the quarter amounted to £3,879, and the expenses to £1,315—leaving a balance of £2,563, of which the directors propose distributing among the shareholders £2,500, equivalent to 2s. 6d. per share, or 5 per cent. per annum, as a final dividend to March 31, '72—from which date the arrangement for amalgamation with the Falmouth, Anglo-Mediterranean and British Indian Companies is proposed to take effect. The balance of revenue, namely £63, is carried to reserve fund. Since the last meeting the directors of the Anglo-Mediterranean Company have carried out the arrangement authorised at the meeting of their company in February last, for the purchase of concessions and lines in the Levant and Adriatic, and have paid a deposit of £50,000 on account of the purchase money. The agreement thus entered into will, on the amalgamation, be transferred to the new company.

The Austrian Telegraphs.

FROM an official statement of the Director General of the Austrian telegraphs the following facts are derived. The total length of the Austrian lines in 1871 was 2,459 Austrian miles, and the total length of their wires, 7,961 Austrian miles.

The systems in operation in that country are the Morse and Hughes Letter-printing Telegraph. They employ 1,221 Morse instruments, of which 1,125 are embossing instruments and 96 ink writers, and 31 Hughes instruments. They also employ the Morse instruments as repeaters.

The gross receipts in Austria for the year ending December 31st, 1871, was 1,858,443 florins (\$929,231), and the total ordinary expenses 2,384,208 florins (\$1,192,104). The extraordinary expenditures for the construction of new lines, 366,807 florins (\$183,303). Deficiency, 525,765 florins (\$262,882). Deficiency, after adding the extraordinary expenditures, 592,372 florins (\$446,136).

Number of messages transmitted during 1870, 2,264,558.

The gross receipts for the year ending December 31st, 1871, was 2,105,296 florins (\$1,062,649), and the total ordinary expenses, 2,805,753 florins (\$1,402,876). The extraordinary expenditures for the construction of new lines, 479,060 florins (\$239,530). Deficiency, 700,455 florins (\$350,227). Deficiency, after adding the extraordinary expenditures, 1,179,515 florins (\$589,757).

Number of messages transmitted during the year 1871, 2,920,847.

The French Cable Again Interrupted.

THE section of the French telegraph cable between Duxbury and St. Pierre has again ceased to work, having been broken from some unknown cause. This does not interfere with the prompt despatch of cable business, as the other facilities are ample for all present demands upon them.

The Telegraph to Queensland.

THE Prime Minister of Queensland, Mr. Palmer, proceeded to Sydney in March last with a view of obtaining the cooperation of New South Wales and of Victoria in guaranteeing a line of submarine telegraph between Queensland and Java. The Agent General for Queensland in this country has received news by telegraph of Mr. Palmer's return to Brisbane, and of his having moved a resolution in the Legislative Assembly, which was favorably received, authorizing the Government to guarantee interest on the cost of a submarine line between the terminus of the land lines in Queensland, at the head of the Gulf of Carpentaria, and Java. Acting under instructions, he was enabled to send out by the outgoing mail of the 17th inst. more than one proposal to carry out the Queensland and Java line within one year upon the basis of a guarantee. Those proposals were accompanied with assurances that the line would be extended to Singapore and Rangoon; thus affording a duplicate communication between India and Australia. It is supposed that it was the desire to obtain the duplicate line as a security against the communication being cut off by the temporary failure of the existing submarine line between Madras and the northwest coast of Australia, which partly influenced the three colonies in question in giving the guarantee. The existing Dutch lines in Java and Sumatra already extend to within a short distance of Singapore, and the laying of the proposed cable to Java would immediately lead to a duplication of the line between Singapore and the Australian Colonies. The Australian Colonies have been the last important communities to become connected by telegraph with the outer world, principally in consequence of the jealousies which exist among them. Some of them have now determined to cooperate, and to establish a reliable system of international telegraphic communication. The South Australian land line between Adelaide and Port Darwin is not yet completed, about 180 miles remaining unfinished. It seems a natural division that one cable should land on the northwest coast and another at the head of the Gulf of Carpentaria, in Queensland. They each accommodate different interests, and are both required as a security against interruption.

Foreign Telegraphic Notes.

THE total number of messages forwarded from Postal Telegraph stations in the United Kingdom during the week ended May 18, 1872, was 279,569—an increase on the corresponding week of last year of 62,933.

A telegraph line between the Thames and Tauranga was fast approaching completion at the last dates from Auckland, New Zealand. A statement as to the working of the telegraphs throughout New Zealand shows a large increase in the number of messages sent during the past quarter, as compared with the corresponding quarter of 1871. The increase in the revenue of the Government from this source is upwards of £1,500, or at the rate of £6,000 per annum.

M. Pierrot, director of telegraphs in France, has been heard before a committee on the revision of administrative services, on the question of uniting the Post-office and his own department. M. Pierrot stated that he was not favorable to the junction in question; but, nevertheless, the committee proposes to ask the Chamber, through the medium of its reporter, M. Chas. Rolland, to make a trial of 400 offices, to be selected throughout the departments.

Telegraphic Brevities.

THE Western Union Telegraph Co., in 1871, used 11,741 miles of wire in construction, 2,488 miles in reconstruction, and 726 miles in repairs—a total of 14,955 miles of new wire put up by that company during the year. The same company also used during the year 934,122 insulators, 50,433 feet of cable, 203,889 cross-arms and 53 tons of spikes and nails.

The Morse telegraph originally required two wires for its operation. It is now found to be possible to transmit four distinct communications—two in each direction—simultaneously upon one wire.

Complimentary Notices on the Resignation of Mr. M. M. Towne.

MR. M. M. TOWNE having tendered his resignation as Train Despatcher for this division of the Northwestern road, it has been accepted, with regret, by the General Superintendent, Mr. Hughitt. Mr. Towne goes, in a day or two, to Atchison, Kansas, where he will take the position of Assistant Superintendent and Superintendent of Telegraph on the Atchison and Nebraska railroads. The good will of a large circle of friends follows the retiring Mr. Towne.—Boone Standard.

M. M. Towne has resigned his situation in the telegraph office of this city, and will take the situation of Assistant Superintendent and Superintendent of Telegraph on the Atchison and Nebraska R. R. Mr. Towne is one of the best men in the employ of the company, and they do not like to lose him. We wish him "God speed" when he leaves Boone, and hope he may better himself.—Boone Co. Democrat.

Prof. Morse's Will.

THE will of the late Prof. Morse has been admitted to probate. With the exception of specific legacies, his whole property is held in trust for the use of his wife, and will be divided at her death among seven children. The following legacies and bequests will be paid from the residuary fund: Home of the Friendless, Poughkeepsie, \$3,000; Nassau Hall, Princeton, to found two scholarships, to be named Finley and Breese, respectively, \$2,000; Union Theological Seminary, Hampden Sidney, Va., \$1,000; Old Ladies' Home, Poughkeepsie, \$1,000; National Academy of Design, New York, for "procuring a suitable medal for the encouragement of art," \$1,000; American Geographical Society, a medal for the encouragement of geographical research, \$1,000; New York City University Scholarship Medal, \$1,000. The Cross of the Knight Commander of the Order of the Dannebrog, conferred upon him by the King of Denmark, is to be returned to the Chancellor of the Order at Copenhagen.

Presence of Mind.

MR. GEORGE LITTLE, the Anglo-American Electrician, of Broadway, New York, and Gregory Avenue, Passaic, saved a lady and child from being crushed by the 4.12 P. M. down train at Rutherford Park, on Tuesday, the 21st.—The Item (Passaic, N. J.)

The Quadrennial Methodist Conference and the Telegraph.

THE Quadrennial Conference of the Methodist Episcopal Church of the United States has just closed its session in Brooklyn, N. Y. Its sessions were held in the Academy of Music, and, under the management of Mr. JOSEPH E. FENN, Manager of the Atlantic and Pacific Telegraph Company in Brooklyn, the wires of that company were run into the Academy exclusively, and furnished telegraphic communication for the delegates and others in attendance. A large amount of business was despatched over the A. and P. lines from the Academy during the sessions of the Conference, and at its

close, so satisfactorily was it done, that a resolution of thanks to the managers of the company was unanimously passed by the Conference.

The June Magazines.

THE MANUFACTURER AND BUILDER.

The June number of *The Manufacturer and Builder* contains the usual variety of articles of interest to mechanics, manufacturers, and others engaged in industrial pursuits, and is illustrated with a large number of excellently executed wood engravings.

New Patents.

For the week ending May 7, 1872, and bearing that date.

No. 126,528.—TYPE WHEEL FOR PRINTING TELEGRAPHS. Thomas A. Edison, Newark, N. J., assignor to Gold and Stock Telegraph Company, New York City.

1. The type wheels c d, each connected to the disk e, but allowed to move laterally, in combination with the sliding sleeves A B, substantially as specified.
2. The locking bar f and springs f', in combination with the laterally moving type wheels, substantially as and for the purposes set forth.

No. 126,529.—TYPE WHEEL FOR PRINTING TELEGRAPHS. Thomas A. Edison, Newark, N. J., assignor to Gold and Stock Telegraph Company, New York City.

The type wheels, each divided into sections and connected to the disk e, in combination with the sliding sleeves f for expanding the wheel, or allowing of its being contracted, for the purposes and substantially as set forth.

No. 126,530.—PRINTING TELEGRAPH. Thomas A. Edison, Newark, N. J., assignor to Gold and Stock Telegraph Company, New York City.

1. The bar p and stops 5 and 6, to regulate the extent of motion allowed to the armature c of an electro-magnet, substantially as set forth.
2. A type wheel rotated by a step by step motion and an impression pad moved simultaneously, in combination with an electro-magnet and mechanism for regulating the extent of motion of the armature for moving the type wheel or effecting the impression, substantially as set forth.
3. The yielding incline 10 and paper feeding pawl e, brought into action by an increased movement of the armature of an electro-magnet, substantially as set forth.
4. An impression pad moved by a spring, to give the impression when the current is broken in an electro-magnet, in combination with a type wheel, substantially as set forth.

No. 126,531.—PRINTING TELEGRAPH. Thomas A. Edison, Newark, N. J., assignor to Gold and Stock Telegraph Company, New York City.

1. The lever m and armature n, contiguous to the lateral poles 6 of the printing magnet, for actuating the bolt i, in combination with the arm 4 and disk m, substantially as set forth.
2. The disconnecting lever 8, operated by the cam 7, in combination with the lever m, armature n, the latch a, bolt i, and levers for the respective type wheels, the parts being arranged and acting substantially as set forth.
3. The bent lever u on the printing lever, in combination with the stop m, lever m, and armature n, substantially as set forth.

No. 126,532.—PRINTING TELEGRAPH. Thomas A. Edison, Newark, N. J., assignor to Gold and Stock Telegraph Company, New York City.

1. The type wheel shaft c, sustained at its ends in the screw bearings e that are clamped by the screws k, as specified.
2. The link e and T lever m, in combination with the type wheels l m and sleeve sliding on the shaft c, as set forth.
3. The ink roller R, made of disks of woven cloth clamped between heads, as set forth.
4. The ink roller sliding upon its shaft, in combination with the pair of type wheels also sliding upon their shaft, as set forth.
5. The union stop w, made of a pin passing into the type wheel shaft, in combination with the worm v and swinging arm c, as and for the purposes set forth.
6. The union tripper B, made as a fork, in combination with the arm c and screw v, as and for the purposes set forth.
7. The paper feeding mechanism, consisting of the dog d, and lever e, moved by the upward motion of the printing lever and the holding dog c, and acting near the respective edges of the paper, as set forth.
8. The type wheel and impression magnets, sustained and adjusted by the yoke A and screws A' that pass up through the bed e, as set forth.
9. The arms f for the paper reel, sustained upon and above the cross bar u that receives the arms of the ink rollers, as set forth.
10. The impression shield, made as an open three sided spring plate attached to the impression lever, as and for the purposes set forth.

No. 126,533.—PRINTING TELEGRAPH. Thomas A. Edison, Newark, N. J., assignor to Gold and Stock Telegraph Company, New York City.

1. A locking mechanism, actuated by the movement of the printing lever, for preventing an impression, in combination with the type wheel and its actuating mechanism that controls the movement of the said locking mechanism.
2. A type wheel and union mechanism, in combination with a locking and unlocking mechanism for preventing or allowing an impression, substantially as specified.

No. 126,534.—PRINTING TELEGRAPH. Thomas A. Edison, Newark, N. J., assignor to Gold and Stock Telegraph Company, New York City.

1. The sliding shield actuated by the T lever v and pins 5 and 6, on the shaft k, in combination with the two type wheels, substantially as set forth.
2. The revolving disk e and the cam 2, in combination with the shield f and type wheels, substantially as set forth.
3. A union stop, actuated by a screw upon the type wheel shaft, substantially as set forth.
4. The lever s and armature 10, at the side of the core of the magnet d, in combination with the union lever w, for moving the same, substantially as specified.

Born.

STANTON.—At Toronto, Ontario, at one o'clock A. M., June 2d, to WILLIAM H. STANTON, of the Montreal Telegraph Company, a son. All well.

Married.

HOWIE—JACK.—At Detroit, Mich., May 2, 1872, by Rev. Mr. Milligan, D. M. HOWIE, Manager W. U. Telegraph office at Fawcett, Mich., to MISS M. T. JACK, of Hamilton, Ont. No cards.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.

FRANK L. POPE, Associate Editor.

SATURDAY, JUNE 8, 1872.

Progress in Telegraphy.

There appears to be of late encouraging indications of progress in the telegraphic art. Great as have been the achievements in this direction heretofore there is now an earnest striving for more effective methods and processes, which cannot but have a most favorable effect upon the future of telegraphy. The business has outgrown the appliances which heretofore sufficed for its purposes, and there has arisen an urgent necessity for the development of means by which the capacity of the lines for business shall be largely increased and its cost cheapened. Many minds are seeking to solve this problem, and capital is not wanting to test the reliability and efficiency of the supposed discoveries and inventions which promise the desired solution.

The duplex instrument of Mr. Jos. B. STARNES, recently adopted by the Western Union Telegraph Company, which has been very thoroughly tested, and which is being introduced on the through circuits of that company, is a material advance towards the desired result. Proverbially slow, and hesitating in adopting improvements, the ample means of that great corporation insure a thorough trial when once approved and purchased. At least fifty per cent. more business can be done over a wire with the duplex—which is an important consideration, in view of the difficulty and expense of constructing and maintaining additional wires on routes already fully occupied.

The automatic processes of WHEATSTONE, LITTLE and others, are also receiving thorough trial in Europe and this country. The English Post-office uses the Wheatstone Automatic on some of its principal routes; and although, as it is understood, the speed attained is but little, if any, more than that of the STARNES duplex, it is found of great advantage in England, where the main routes are so crowded with wires as to render any addition to them very difficult and troublesome. In this country the Automatic Telegraph Company, with the LITTLE inventions, and improvements which have been made from time to time, are earnestly striving to realize much greater results than have heretofore been considered possible. Much time and money have been spent in the efforts to perfect the system, and although the end has not yet been reached, considerable progress has been made towards it. The company have not yet opened their line for business, but we understand that practical, experimental working has proved reasonably successful. It is true that the sanguine anticipations of Mr. D. H. CRAIG, who, more than two years ago, prophesied that in ninety days the utter valuelessness of the "old foggy" systems would be demonstrated, have not been realized—as, in fact, very few beside himself, who were practically familiar with telegraphy, anticipated that they would be. Such developments are necessarily of slow growth. They must be made step by step, and difficulties unexpected and unforeseen must be encountered and overcome. With a steadfastness which is highly commendable the company has held to its purpose, regardless of the time and cost required to accomplish it. That ultimately they will succeed in introducing valuable improvements there is no doubt. That the automatic is destined to supersede all existing methods of telegraphy may reasonably be questioned. We are inclined to believe that the automatic system will find its mission eventually as a valuable auxiliary to the ordinary systems, and be principally used on through routes, where the pressure of business is constantly increasing beyond the capacity of the facilities to accommodate it.

It cannot be questioned that there is a desire that the charges for telegraphic service shall be reduced, and all improvements which increase the capacity of the lines for business render such reduction more feasible.

There is no doubt but that the reduction of cost increases the use of the telegraph by the people. As is well known, THE TELEGRAPHER has never been the advocate of what is popularly known as cheap telegraphy, but it does favor a reduction of charges for telegraphic service as rapidly, and to such extent as the conditions and expense attendant upon the performance of that service will justify it. The capital invested in the telegraph business is entitled to adequate and reasonable returns therefor. Until such returns are secured the rate of charges for telegraphic service cannot be considered as excessive, unless made so high as to restrict and reduce the business below the capacity of the available facilities.

There are also other encouraging signs of telegraphic progress in the more general adoption of improved conductors and batteries, which should not be overlooked. Inferior qualities of wire are becoming more and more unseizable, and the demand for really good wire is increasing. Improved forms of battery are also being used, and superseding the less constant and more costly batteries, which thus far have been very generally regarded as indispensable.

For these and other reasons, which we will not now particularize, we regard the indications of progress in telegraphy as most encouraging, and its future prospects as promising. Day by day telegraphy enters more and more into popular use and appreciation. Day by day it becomes more indispensable to business and social interests. Within the lifetime of a single generation, the little experimental line between Baltimore and Washington has expanded into a network which covers the whole land, and we might say the whole civilized world. Electricity and steam have changed the whole structure of modern society, and are making of one family all the civilized nations of the earth. Practically the uttermost parts of the earth are to-day nearer than but a few decades ago were places a hundred miles apart. The telegraphic infant of 1844 has become the giant of 1872, and is rapidly and constantly increasing in importance and usefulness; and everything that tends to aid in its development and progress is cause for congratulation and worthy of encouragement.

Death of a Great Journalist.

On Saturday afternoon, June 1st, JAMES GORDON BENNETT, known throughout the world as the founder and manager of the *New York Herald*, closed his earthly existence.

At his death he was in his seventy-seventh year, and for the last five years has taken but little part in the conduct of the great journal which he had established.

We have not the space, or is it appropriate in this paper to repeat or criticize the history or management of that most successful journal—which is an illustration of what may be accomplished by foresight, energy and perseverance.

Probably no person or publication in the world has used the telegraph so extensively and so constantly as Mr. BENNETT and the *Herald*. It was the foundation principle of his enterprise to secure the latest and fullest reports of news, and in this the deceased was the revolutionist of journalism as it was before the advent of the *Herald* in the journalistic field.

The instruction to every correspondent and reporter, upon entering the service of the paper, was and is, that "the *Herald* must not be beaten;" and to secure appreciation and favor it was essential that the paper should be kept not only abreast, but in advance of other newspapers in this respect. Success being achieved, there was no grumbling at the expense incurred. Failing in this, no other qualification would compensate for it.

It is remarkable that, with his energy and enterprise, Mr. BENNETT should have looked coldly and with disfavor upon the early efforts to introduce and establish the electric telegraph, which subsequently has done more than any and all the other agencies to realize his aspirations and efforts to establish a great newspaper, but such is the fact. It is a matter of history that when Mr. CORNELL applied to Mr. BENNETT to aid in giving to the projected telegraph favorable introduction and practical realization, he declined to do so, on the ground that it would afford rival newspapers the means to equal his own enterprise in obtaining the news, and thus impair the prestige of the *Herald* as the only paper which had all the news. When, however, the

success and capabilities of the telegraph were finally demonstrated, he seized upon it as the agent which must inevitably realize his ideas of what a great newspaper must and should be. Under his lead the newspapers of the present day are as far ahead of those of thirty years ago as the railroad train is of the old fashioned stage coach. Aided by the superior judgment and executive ability of Mr. FREDERICK HUDSON, he lived to see the *Herald* known not only throughout the United States but the world as the great American newspaper.

He has gone to his final rest, but the *Herald* lives as his best monument, and will secure to him through future ages an immortality of remembrance and fame which could scarcely have been anticipated in the wildest dreams of the poverty stricken young man who, in 1819, landed at Halifax, Nova Scotia, and thence slowly and painfully made his way to Boston, Mass., and for many years thereafter waged an unsuccessful warfare with adverse fate.

Gratifying Indications of Progress.

THE official journal of the Western Union Telegraph Company states that the CALLAUD battery, of which an improved form has recently been designed by Mr. G. M. PHILIPS, Supt. of the Company's manufactory in this city, has been adopted by that company, and is to be generally used upon its lines, in place of the bichromate of potash and nitric acid batteries. This is a gratifying indication of progress on the part of the managers of that company. We do not despair, in process of time, of their finally outgrowing the absurdity of using glass insulators, and possibly adopting the compound telegraph wire as a conductor. The adoption of STARNES' duplex instruments and the CALLAUD battery in one season, certainly encourages the hope that ancient and exploded theories are giving way before the constant expositions of scientific truth and progress in the columns of THE TELEGRAPHER.

The London Society of Telegraph Engineers.

Mr. DAVID BROOKS, of Philadelphia, has been elected a member of the Society of Telegraph Engineers, which organization has its centre in London, England, but embraces the leading electrical engineers of Europe. Prof. MORSE, at the time of his decease, was the only American member, but recently, as announced in last week's number of THE TELEGRAPHER, Mr. FRANK L. POPE and now Mr. DAVID BROOKS have been honored by election to membership.

A New Patent Agency.

AS ANNOUNCED in a recent number of THE TELEGRAPHER, Mr. JAMES A. WHITNEY, who has for several years edited the *American Artisan*, has retired from that position. Mr. WHITNEY is the President of the New York Society of Practical Engineering, and is intimately associated with the mechanical and engineering interests of the country. He has opened an office at No. 128 Broadway, in this city, and offers his services in securing American and foreign patents, as an expert in patent suits, in conducting investigations in English, French and American industrial records and technical publications, in examining and reporting upon new processes and machinery, and in designing apparatus for industrial uses.

We take pleasure in commending Mr. WHITNEY to those who may have occasion to avail themselves of his services. His experience as editor of an industrial organ, and his familiarity with mechanical and technical matters, peculiarly qualify him for his new business, and we have no doubt but that those who may confide their interests to him will find it to their advantage to do so.

Return of Gen. W. F. Smith.

Gen. W. F. SMITH, President of the International Ocean Telegraph Company, arrived home on Wednesday last. He had been absent about three months in Cuba and Florida on business of the company. The second cable of the International Company between Key West and Cuba has been picked up, and will soon be relaid—affording the additional cable facilities which the increasing business of the company will soon require.

There are 17 pneumatic tube lines in operation in London, varying in length from 900 yards to 29 yards.

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Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
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Toronto, Canada,
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These Features combined form the

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has met with the universal approbation and commendation of the

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AND THE

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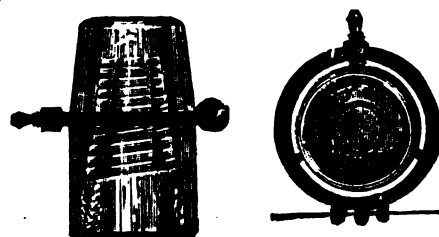
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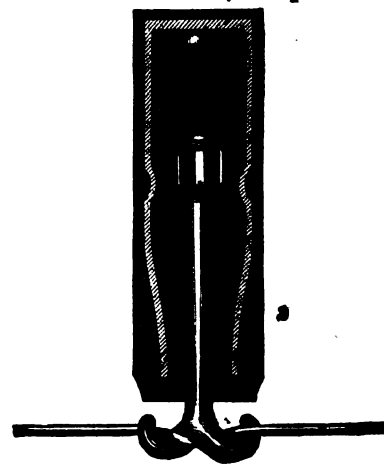
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A Journal of Electrical Progress.

Vol. VIII.—No. 43.

New York, Saturday, June 15, 1872.

Whole No. 309

Decision of an Important Suit for Infringement of a Telegraph Patent.

U. S. CIRCUIT COURT, SOUTHERN DISTRICT OF NEW YORK. *S. F. DAY AND H. A. MANN vs. BANKERS AND BROKERS' TELEGRAPH COMPANY.*

[In Equity.—Decision rendered January 20, 1872.]

PATENT OF S. F. DAY FOR IMPROVEMENT IN ELECTRO-MAGNETIC TELEGRAPHS—MERE CHANGE OF DEGREE NOT PATENTABLE.

The combination, in an indenting telegraphic registering instrument, of a sounding box, a lever and a sounding post, so arranged that the blow of the armature will be struck directly toward the box (which forms the subject of the second claim of S. F. Day's reissued patent of March 23, 1869), is applicable as well to a local current produced by a local battery as to a main line current where a local battery is not used.

As the use of the arrangement in a local current would be an infringement of the claim, the prior use of the arrangement in a local current is an answer to the claim.

Such a combination was in use in the "Chester Sounder," as a successful practical telegraphic instrument, before the invention of Day.

A small box having been used in a local circuit for making the sound produced by the stroke of the armature more audible: Held, that to increase the size of the sounding box for use in a main line circuit, so as to secure a larger volume of sound, was an obvious change, and was not invention. The difference is one merely in degree, not in patentable substance.

A suit brought by Samuel F. Day and Henry A. Mann for an alleged infringement of the second claim of reissued letters patent, granted said Day March 23, 1869, for an improvement in electro-magnetic telegraphs, the original of which bears date May 24, 1864.

The defence relied upon a lack of novelty in the patented invention.

The character of the invention and the facts are stated in the opinion.

[*Thos. P. How*, for plaintiffs; *Chas. H. Wesson*, for defendants.]

BLATCHFORD, J.

This suit is founded on reissued letters patent granted to Samuel F. Day, one of the plaintiffs, March 23, 1869, for an "improvement in electro-magnetic telegraph" on the surrender of original letters patent granted to him May 24, 1864. The second claim of the patent is the only one in question in this suit. The specification says:

"This invention relates to a certain improvement in Morse's electro-magnetic telegraph, which dispenses with the use of local batteries and relays at the several stations on the line; and it consists, in part, in the adaptation to and combination of an indenting register with the main line. Said invention also consists in the arrangement, in combination with the other parts of the instrument, of a sounding box, in the manner herein-after set forth, by which the audibility of the sound produced by the blow of the registering lever is very much increased, thus enabling the operator to catch the sounds with much greater facility in case he desires to read a message by sound."

The specification then proceeds to describe the construction of the apparatus with reference to the drawings. So far as the improvement covered by the second claim is concerned the arrangement is this: There are two electro-magnets placed in a vertical position and surrounded by a sounding box, C. D is a lever, with a pin or arm projecting downward from its under side. This lever is attached to an arbor, and is centered between two thumb-screws, which terminate in a standard, E. An adjustable thumb-screw with a steel point, F, is attached to that portion of the lever D which is represented in the drawings as being bent downward. The opposite end of the lever terminates between a standard, G, provided with suitable thumb-

screws for adjusting said lever, according to the strength of battery, on the main line. The lever D is hung on the standard E at about two thirds its length, taken from the right hand end of the lever. A spiral spring is made to fasten on the arm or pin of the lever D, the tension of which is regulated by a thumb-screw, around the shaft of which a fine cord is wound, which cord passes through the centre of the standard G and connects with said spiral spring. The object of such spiral spring is to withdraw the armature on the lever D from the electro-magnets when the circuit is broken. The apparatus is provided with clock-work machinery to feed continuously paper, which is to be marked by the indenting register. When the circuit is closed and the armature is attracted to the magnets, the steel point F is forced into the moving paper and produces on it strokes or dots. The specification then states that it is necessary to the success of the instrument in a main-line current, not only that the fulcrum of the lever D should be placed as near as practicable to that end of the lever which carries the steel point F, but that the magnets should, instead of being made of No. 22 wire, be made of No. 32 wire, and, instead of being made of a weight of from four to eight ounces of wire, be increased to from twenty ounces to two pounds in weight, and that the length of the cores should be increased to about three inches, and their diameter to three eighths or one half of an inch. The specification proceeds:

"By constructing my apparatus in this manner I am enabled to work an indenting registering instrument in a main line circuit of any ordinary length, without the intervention or aid of a local battery; and by this means I entirely avoid the expense and trouble of the latter. This might, perhaps, be done by the change in the construction of the magnet without changing the lever from an equal beam, but I prefer to construct the lever in the manner described, as it very materially aids in the accomplishment of the result. The combination, with a registering instrument, of a magnet constructed as I have described, enables the line current to operate upon the instrument with great intensity, and this intensity well supplies the place of the volume derived from the local battery by which it is now customary to work such instruments. The object of the improvement being to work an indenting registering instrument by the power of the main line current, it is obvious that the nature and gist of the invention consists in giving to the part such a construction as to cause this current to act upon the instrument with sufficient intensity to properly indent the paper for ordinary business purposes, on a line of ordinary or equivalent construction and length, in such a manner as to be available for the ordinary purposes of telegraphing; and that the line of distinction between this invention and the old form and manner of construction is found in the adaptation of the instrument to the successful accomplishment of this purpose, of which it was before incapable.

"It will be observed that the fulcrum post E and the sounding post G are set upon the top of the box C, instead of being attached directly to the bed plate of the machine, as in the construction now in common use. The object of this improvement is to make the sound produced by the blow of the lever more audible, which result it accomplishes in a very satisfactory manner—thus enabling the operator, if qualified, to read, by sound, if desirable, under circumstances in which it would otherwise be difficult, if not impossible. It will be observed that the sounding post, or part upon which the blow is struck, is so attached to the sounding box C, and the other parts are so arranged in connection with it, that the blow is struck directly toward the box in such a manner as to produce vibration thereof by direct action—that is to say, a tangential line drawn from the arc in which the armature vibrates, at the point at which the blow is given, would intersect the box, making the action of the blow direct in producing the vibration and consequent sound. It is only in this way that the full effect of the blow in producing the sound for reading the message can be realized.

"I am aware that an instrument has before been constructed in which the coils have been placed longitudinally above a similar box, and a blow struck in a line parallel to the top of the box and passing outside of and above said box; but this does not accomplish

the purpose of my invention, as the action of the blow is not and cannot be direct, but is only incidental, and does not have that effect in developing sound from the box which a direct blow would have."

The claims are these:

"1. I claim combining with an indenting telegraphic registering instrument a magnet constructed according to the proportions described in the foregoing specification, or substantially so, so as to accomplish the result stated, by means substantially the same—that is to say, so as to give sufficiency of intensity and power of action to produce uniformly legible indentations in the paper in an ordinary line current, without the aid of a local battery, as hereinabove set forth.

"2. I also claim the arrangement of the sounding box C, the lever D and the sounding post G of a magnetic telegraph, in combination with each other, in the manner hereinbefore described, and to the effect stated."

The principal defence urged in respect to the second claim of the patent, which is the only one alleged to have been infringed, is its want of novelty.

There can be no doubt, from the language of the specification and claim, and from the evidence, that while the combination specified in the first claim is one for use only in a main line current when a local battery is dispensed with, the arrangement or combination covered by the second claim is one which is capable of being used either in a local current or in a main line current, and is not claimed merely when used where a local battery is dispensed with. The combination in the second claim is claimed "in the manner hereinbefore described and to the effect stated." The "manner" is the arrangement of the sounding box, lever and sounding post relatively to each other, so that the blow of the armature will be struck directly toward the box, so as to produce a vibration of the box and consequent sound by direct action. The "effect" is to make the sound produced by the blow more audible than if the blow were not struck at all in the connection with a box or hollow base, but were struck in connection with a solid base, or were struck in connection with a box or hollow base, but not directly toward it. This arrangement or combination in the second claim is applicable as well to a local current produced by a local battery as to a main line current where a local battery is not used; and the use of the arrangement in a local current would undoubtedly be an infringement of the claim. Hence, the prior use of the arrangement in a local current is an answer to the claim.

The evidence is clear that the arrangement or combination, in the second claim, of the sounding box, lever and sounding post, with the blow struck directly toward the box, was in use as a successful practical telegraphic instrument a considerable time before the invention of Day. To say nothing of any other apparatus, that represented by exhibit No. 6 was so in use. It produced the "effect" stated in the specification, of making "the sound produced by the blow of the lever more audible" than it would be with a solid base. It was known by the name of the "Chester sounder." It had and could have no other object than to make more sound than would be made by a solid base—the base being a box made hollow, and the blow being struck directly toward the box. The instrument was small and the box was small, because it was intended for use and was used only in a local current—and the magnet was small, and the sound was feeble at most. But the moment the occasion arose for using an instrument that would make more sound, the production of more sound by making the box larger was obvious, and was no invention. It was only the difference between a large drum and a small drum. The absolute parts and their relative arrangement and their action, and the effect, are the same in the patent as in the Chester sounder, only the sound is louder because the box is larger. The Chester sounder produced more sound with its box than if the base had been solid. Day's apparatus produces more sound than Chester's, but only because the box is larger. The difference is one merely in degree, not in patentable substance.

The date of the existence of the Chester sounder is carried back to 1858 or 1859, a time anterior to the invention of Day. In the shape in which it then existed it continued to be used until quite recently. It was a complete and successful instrument, and was used in

telegraph offices, in various parts of the United States, in local circuits. The instrument was placed upon a box, the coils were set in a perpendicular position, the lever was horizontal, the blow was struck on the end of a sounding post in a direction toward the box, and the sound posts and the supports of the lever centres were fastened to a metallic plate, which plate was screwed to the top of the box. When the circuit was closed the lever was drawn down and struck the sounding post, and the blow produced a sound which was louder because the sounding post was attached to a box instead of being attached to a solid base. The combination of parts, their arrangement relatively to each other, the direction of the blow and the effect in sound were the same in substance and in kind as in the combination covered by the second claim of the Day patent. The instrument was not practically applicable to a long line or main circuit, but only to a local circuit or a line a few miles in length. But the difference between a main circuit and a local circuit is merely one of length. It is shown that the larger and heavier the magnet the greater the range of length of line on which the Chester sounder would work, and the larger the box the louder the sound. I cannot resist the conclusion, from the evidence, that Day's sounder is merely the Chester sounder—adapted, indeed, for use on a main circuit by having a larger magnet and a larger box, and its other parts proportionally enlarged; but the combination of parts, their mode of operation, and their result in kind, as claimed in the second claim of the patent, remaining the same as in the Chester sounder.

It may, perhaps, be that Day invented something in connection with the sounder which he can patent by a proper claim; but what he has patented in his second claim existed before in the Chester sounder. He merely claims the sounding box, lever and sounding post, in combination with each other, to make a louder sound when the lever strikes the sounding post, by reason of the apparatus being set on a hollow box instead of a solid base, and the blow being struck directly toward the box. The three parts are not claimed in combination with any particular magnet or with any other part of the apparatus; they are not claimed in combination with a large magnet to work in a main line circuit (if such a claim could be made), but are claimed, only in combination with each other, to make a louder or more audible sound in any circuit, long or short, and with any size of magnet, to develop sound from a box by a blow struck directly toward a box.

The result is that the bill must be dismissed, with costs.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Congress and the Telegraph.

WASHINGTON, D. C., June 12.

TO THE EDITOR OF THE TELEGRAPHER.

THE session of Congress closed at nine o'clock P. M. on Monday last, and with this communication my duties, as the Congressional correspondent of THE TELEGRAPHER, will cease until next December. There was danger that an extra session would be necessitated through the failure of the Sundry Civil Appropriations Bill, but a compromise was finally effected and the bill allowed to pass, thus happily averting the threatened misfortune.

My duties have been comparatively light during the recent session, as Congress has been too much exercised with political matters to pay much attention to the telegraph; and this letter will be more a summing up of what has not been done than a record of what has been accomplished.

As has already been very fully set forth in the columns of THE TELEGRAPHER, the scheme of the Postmaster-General, endorsed by the President in his annual message at the commencement of the session, for the assumption by the Government of the telegraphs of the country, as a department of the postal business, met with so little favor that it was practically defunct in the first week of the session. Its reference to the Committee on Appropriations in the House of Representatives, instead of a Special Committee, was accepted as its practical defeat. The committee had several hearings on the subject, however, and finally voted to recommend the Hubbard scheme for a telegraphic corporation which should monopolize the business and work in conjunction with the Post-office Department. Mr. Palmer, of Iowa, was authorized to prepare a favorable report, and to report the Hubbard bill to the House.

Mr. Hubbard spent most of the time here during the session, and worked in favor of his project as earnestly and industriously as possible. It was, however, finally decided that a report at the present session would be inopportune, and likely to receive little consideration, and so the matter was allowed to remain in the hands of the committee, and go over to the next session, when it will probably be reported, and action sought to be obtained upon it. The prospects of success even then are not brilliant, but Mr. Hubbard has full confidence that ultimately his scheme will be adopted and authorized by Congress. We shall see.

The Hubbard bill was reported in the Senate, but beyond a few hours' speech making on the subject of a postal telegraph, nothing was done with it, and it goes over on the Senate calendar.

Mr. Fernando Wood's cable bill, which was passed in the House, and which was fully reported in THE TELEGRAPHER, was not reached in the Senate, and went over with the unfinished business.

The bill to grant a land bounty of 160 acres to each operator who was in the military telegraph service of the United States during the late civil war was not reported from the committee having it in charge, as there was not time to act upon it, but will probably come up at the next session. With proper efforts on the part of the telegraphers interested, there is little doubt but that this act of justice to a class which rendered most valuable and important services, and whose claims have heretofore met with no recognition, may be secured. If the policy of granting bounties at all to those engaged in the military service is correct, certainly the military telegraphers are entitled to share therein. Before the next session commences those who are interested should effect an organization which shall present their claims in proper shape, and supplement the efforts of Mr. Ritchie to secure them their deserts.

The bill for the incorporation of the Loomis Aerial Telegraph Company was indefinitely postponed in the Senate, which is equivalent to its rejection.

An act was passed supplementary to the National Telegraph Act, as it is termed, and this was the only telegraph bill that became a law during the session.

The act reducing the duties on imports reduces by ten per cent. the duties on wire and telegraphic apparatus and materials. This takes effect August 1st.

All telegraph bills not included in the above failed to receive consideration, and went over with the unfinished business.

Thus closes the second session of the Forty-second Congress. Thus far the present Congress has done nothing to damage telegraph interests, for which it is to be commended. The third session is the short one, and immediately follows the Presidential election, and there is not much danger of its finally acting on the project for monopolizing the telegraphs of the country.

I now bid adieu to Washington for the season, and leave to the other correspondents of THE TELEGRAPHER the duty of informing your readers of any matters of interest that may occur here during the recess. When Congress again assembles I hope to be here, as usual, and watch and report Congressional proceedings in regard to telegraphic matters. CAPITOL.

Automatic vs. Morse Telegraphy.

TO THE EDITOR OF THE TELEGRAPHER.

As you have seen fit, in the last number of your journal, to assail my reputation as a prophet in telegraphy, perhaps you will allow me to say a few words in reply, and in arrest of public judgment upon the subject of automatic telegraphy.

You say that my "sanguine anticipations of two years ago have not been realized." Let us see if this is quite correct.

It is now more than three years since I became identified in interest with a new system of fast telegraphy, which, at that time and for a long time subsequently, was publicly denounced by the managers of the Western Union Company, and by all the "old fogies" connected with the telegraph business of the country, as an old and exploded system, which Mr. Orton assured his shareholders he had "fully tested and discarded as totally valueless, either in connection or in competition with the Morse system." This pronounced judgment of the able gentleman at the head of the great monopoly was vigorously backed up by his shadow, the electrician of his company, and it cannot be denied that science and practice at that time was largely on their side in the controversy which ensued.

From the first of 1869 till the close of 1870 it required a good deal of moral courage to publicly defend an untried and unscientific system of telegraphy, which my best and most intelligent friends, including the editor of THE TELEGRAPHER and the editor of the *Journal of the Telegraph*, believed to be impracticable, if not visionary; but by dint of hard work, and a good deal of it, under trying difficulties, greatly heightened by the misrepresentations of those whose interests would be largely and injuriously affected by the success of the new system of telegraphy, I finally succeeded, in the fall of 1870, in getting up three hundred miles of telegraph wire, whereby our electrician was enabled to make full and conclusive tests as to the practicability of doing all and much more than we had ever claimed on behalf of our new system.

In my official letter of December, 1869, to the directors of the National Telegraph Company (to whose liberality I was largely indebted for the means to develop the new system), and subsequently, in my controversies with Mr. Orton, Mr. Prescott and others, I asserted our ability to transmit as much intelligence over a single wire, by our automatic system, as could be transmitted over fifteen wires by the Morse system. In other words, Mr. Orton had publicly testified that two expert operators, by the Morse system, could telegraph, over one wire, 600 words per hour—or 9,000 words per hour with fifteen wires and thirty expert operators.

In numerous tests, between August and November, 1870, we telegraphed, by our automatic system, over

our single wire, between Washington and New York, more than 60,000 words per hour, and recorded the same accurately, in clear black telegraph characters.

This statement can be verified by the testimony of good Morse experts, and if you credit my assertion you will, I am sure, relieve me of the charge of being a "false prophet" in regard to the only point in our new system upon which you or any other unprejudiced "old fog" Morse people could ever have had a rational doubt.

It is quite true that there were in the fall of 1870 some weak points in our new system; but they were trivial in character and purely mechanical, and I apprehend the day has passed for a gentleman of your intelligence and large experience to question the possibility of any purely mechanical movement.

We had a very simple and beautiful tablet perforator, but it was slow, and only capable of six to ten words per minute; but even that, with our exceeding fast method of telegraphing, placed our new system more than fifty per cent. ahead of the Morse, or any other system then in use.

For reasons disconnected with our new system of telegraphy, it became necessary that I should make new arrangements, in the fall of 1870, for the further introduction of automatic telegraphy; and the control of the system, which up to that time had been in my hands, was then turned over to the present Automatic Telegraph Co., but not until full guarantees had been obtained that a new perforating machine could be speedily devised, capable of a speed of even one hundred words per minute. Such a machine was fully developed, and placed in our office in July following (1871), and at the same time was placed there a beautiful finger-keyed type writer, by means of which a single operator can print, in plain Roman characters, and in lines and pages, a greater number of words than can be written with a pen by four ordinary penmen—which, for copying telegrams, is of scarcely less importance and value than the improved perforator. With the two machines combined, and the rapid and reliable method of fast telegraphing, the new system possesses advantages equal to more than seventy-five per cent. as compared with any other system of telegraphing in America or Europe.

Before closing, I must repel your idea that our system of automatic telegraphy is destined to find its "mission as an auxiliary to the Morse system," and only to be used on the great "through routes." It seems to me wonderful that a gentleman of so much knowledge and shrewdness as you, confessedly, possess, should arrive at such a lame and impotent conclusion in the face of the now well known facts—

1st. That we have, besides the before named rapid perforating machines, a smaller and less rapid perforator, which is durable, and costs not over \$20, and can be worked at sight by a child, and is capable of perforating thirty words per minute. Of course, this machine will be largely used by business men, and in way offices and on side lines.

2d. The transmission of messages over the wire is, as you well know, wholly automatic, and at any desired speed—from one hundred to one thousand words per minute. (We have, with machinery recently constructed, telegraphed over the Washington and New York line even fifteen hundred words per minute.)

3d. The type writer copies out in plain Roman print fifty to seventy-five words per minute.

Each one of these three things is performed by the labor or supervision of girls, and each by itself is as simple and far more reliable than it is for two first class Morse operators to telegraph six hundred words per hour between New York and Philadelphia.

Now, with such a system and such mechanism as I have described, will you point out to your practical and intelligent readers why our automatic system is to be only an "auxiliary to the Morse system?" If you will sit your self down to this task I venture the prediction that you will arrive at the same conclusion I did three years ago, in discussing this point with the late Mr. Bennett, and that is that our new system possesses immensely greater advantages over the Morse for way offices and side lines than it does for the great through routes. Twenty girls, using our system, could "call through" and take and send an average of five hundred words at each office every hour of the day, whilst there are no twenty Morse operators in the country who could "call through" a line with twenty offices and take and send an average of even sixty words per hour.

Will you pick your flint and try again?

D. H. CRAIG.

A Correction.

LAWRENCE, KANSAS, June 6.

TO THE EDITOR OF THE TELEGRAPHER.

IN THE TELEGRAPHER of June 1st appeared the marriage notice of Charles N. Hart, in which he was represented as manager of the Lawrence, Kansas, Western Union office. As this is the second notice which has recently appeared in which Mr. Hart is styled manager of that office, out of justice to Mr. Henry Warren, the present able manager of that important office, I desire to publish this correction, and possibly prevent in future any such erroneous presumptions and summary official decapitation or displacement of Mr. Warren.

J.

The conversion of water into vapor develops electricity.

Personals.

Mr. ALEX. F. WARK has been transferred from the Lake Charles, La., to the New Orleans, La., Western Union office.

Mr. JUDSON R. ALDRICH, formerly of Eastport, Iowa, has accepted a situation at Junction of K. C., St. Joe and C. B., and Rock Island and Pacific Railroads at Beverly station, Missouri.

Mr. M. J. LANDY has resigned his position in the Western Union, New Orleans, office, and returns to New York.

Mr. E. A. LESLIE, of the New Orleans, La., Western Union office, has resigned.

Mr. W. T. STONE has resigned his position with the Western Union Company at New Orleans, La., and accepts a position in the Pacific and Atlantic New Orleans office.

Mr. G. D. MILLS has resigned from the Western Union New Orleans, La., office.

Mr. A. C. BARKER, of the New Orleans, La., P. and A. office, has resigned and goes to St. Louis, Mo.

Mr. W. D. WEST has resigned from the P. and A. New Orleans, La., office, and accepts a position in the Western Union New Orleans office.

Mr. M. S. BACON, of the P. and A. Cincinnati, Ohio, office, takes a position in the New Orleans, La., office of the same company.

Mr. CHARLES E. CLARK, for a number of years past connected with the Albany, N. Y., office of the Western Union Company, has resigned his position, and accepted one in the Money Order Department of the New York Post-office.

Mr. CHARLES E. SHELLEY, of Rome, N. Y., has accepted a position in the Western Union Albany, N. Y., office.

Mr. FRED. H. LAWRENCE, Superintendent of Telegraph of the Lawrence, Leavenworth and Galveston Railroad, Lawrence, Kansas, has gone home to Albany, N. Y., on a month's leave of absence.

Mr. OLIVER C. CAMP, General Travelling Manager Pacific and Atlantic Telegraph Company, having been recalled to Pittsburgh, Pa., the duties devolved upon him as assistant to Division Superintendent will hereafter devolve on Mr. SORRELL PRARSON, cashier, Chicago office.

The Telegraph.

By Cable.

AN ADDITIONAL TELEGRAPH CABLE BETWEEN ENGLAND AND THE CONTINENT.

LONDON, June 7.—The laying of an additional telegraph cable to the Continent has been completed. The line runs direct from Lowestoft, on the Sussex coast, to Emden, Hanover. Telegraphic communication was opened to-day.

A New Telegraph Line.

On the 5th inst. Mr. H. A. Clute, Supt. of Telegraph of the Lehigh Valley Railroad Company, completed a through telegraph line from Waverley, N. Y., to Philadelphia, Pa., a distance of two hundred and fifty miles. The wire is insulated for the whole distance with Brooks' improved paraffine insulators, and, with a small Callaud battery at each end, it was worked through a heavy rain, and there was scarcely any perceptible escape on the whole length of the line. The wire is to be used for through railroad business.

Montreal Telegraph Company.

THE affairs of this extensive company, under a skillful management and liberal policy, have prospered most satisfactorily. Sir Hugh Allan is the master spirit of its enterprises, and, with the able superintendence of Mr. H. P. Dwight, it is not altogether a matter of surprise that this is so—that energy and practical success are impressed upon all its undertakings. One hundred and fifty new offices were opened last year—the total number on main lines and immediate connections being 895, viz: in Ontario, 430; Quebec, 215; United States, 130; New Brunswick, 66; and in Nova Scotia, 54. The total number in the Dominion is 766, scattered from the most remote points of Gaspe, in Quebec, to the extremes of Ontario. The total length of wire is about 15,000 miles. Extensions more considerable than any made heretofore are projected for this year. In this connection we note the erection at Toronto of an elegant and substantial office building by the company, of which it has recently taken possession. A cut and full description is given of it in the *Montreal Times*. Every arrangement and appliance for convenience, comfort and despatch of business seems to have been observed and provided. The officers' rooms are elegant, conveniently arranged, and supplied with means of easy and rapid intercommunication; and the operating rooms are well lighted, warmed and ventilated, making a life therein far less irksome than in the dark, close and unwholesome rooms—cells, rather—to which operators have been, and even now are too often consigned. Men will live longer, work better (and die happier!) for having been afforded such comfortable working places—in which, it must be borne in mind, they must spend from one third to one half their adult life. We commend the thought-

fulness of this company in this matter to the attention of some of our own companies which are about building new offices.—*Chicago Railway Review*.

Foreign Telegraphic Notes.

THE *Turkistan Government Gazette* announces that the line of telegraph will be continued in the course of this year from Tashkent to Fort Merke. The difficulty of making this line through the dreary and treeless waste of the Kirghese Steppe is much increased by the total absence of timber suitable for the poles. It has, therefore, been decided to build them up of bricks. Till the line is completed the Minister of the Interior has given instructions to the telegraph officials that answers to messages sent to Turkistan may be forwarded via Omsk, Orsk and Bazaar.

Mr. John Bellows, of Gloucester, prints for the British Government the blank forms for telegraph messages, and has to issue weekly 300,000 copies, i. e., 1,300,000 monthly, and 15,000,000 in the year. The order involves the use of forty-two tons of paper in the twelvemonth. The paper so used is a composition of palm leaves, esparto grass and oat straw.

The Aerial Telegraph Company, of England, proposes to telegraph across the ocean without the use of a cable, and without employing the galvanic battery; in fact, it offers to get rid of the whole mechanism of telegraphy as at present existing, and to use the electricity always to be found in the atmosphere as the sole agent of communication. The *modus operandi* by which this new marvel is to be effected has not yet been made public.

The fourth Atlantic telegraph cable is now being made by the French Transatlantic Telegraph Company, and is to be laid between the coast of Massachusetts and France in 1873.

The total number of messages forwarded from postal telegraph stations in Great Britain during the week ending the 25th May, 1872, was 246,761—an increase of 24,668 over the corresponding week of last year.

The result of the Derby race in England was received by the Falmouth and Gibraltar Telegraph Company at 3.29 P. M., and was immediately telegraphed to India, reaching the various stations as follows: Lisbon at 3.30 P. M.; Gibraltar at 3.30 P. M.; Malta, 3.31 P. M.; Alexandria, 3.31 P. M.; Suez, 3.32 P. M.; Aden, 3.32 P. M.; Bombay, 3.33 P. M.

Telegraphic Brevities.

THE Great Western Telegraph Company are stringing poles from Lawrence to Topeka, Kansas, and will soon have their lines extended west as far as the latter city.

Mr. H. A. Clute, superintendent of telegraph of the Lehigh Valley Railroad, says: "The Callaud battery is the cheapest and best ever invented. I have worked four wires from fifty cells just one year, and all that has ever been done to it in the way of maintenance has been to put one half pound blue vitriol in each cell once in six weeks. One set of sines have been in the cells a year, and will hold out six months yet."

The Northwestern Telegraph office at Houghton, Mich., was the scene of great activity last week. The *Detroit Tribune* reporter sent one message which contained some 8,500 words.

Resignation of and Presentation to Mr. O. C. Green.

Mr. O. C. GREEN, Superintendent of the Telegraph Department and Train Despatcher of the St. Paul and Pacific Railroad, has resigned his connection with the road on account of ill health. Mr. Green is one of the best telegraphers and electricians in Minnesota, and also one of the most efficient and popular Superintendents, and the officers and operators in the general office at St. Paul made his retirement the occasion of signifying their good will by the presentation of a gold chain and set of sleeve buttons. The following, from the *St. Paul Daily Press* of the 2d inst., gives the details of this pleasant and well deserved compliment:

"O. C. Green, Esq., the retiring Superintendent of the Telegraph Department of the St. Paul and Pacific Railroad, was yesterday afternoon presented with a magnificent gold chain and set of sleeve buttons by the officers and operators in the general office at St. Paul. The little ceremony came off in the telegraph office, Mr. Green being taken possession of just as he was about to take a message from the wires."

"The presentation was made by Herman Trott, Esq., of the Land Department, in a few well chosen and complimentary remarks, informing the recipient that the gift was intended as a token of the high esteem and sincere good will of his office friends. Mr. Green was too thoroughly surprised to respond at length, but expressed his full appreciation of the compliment and of the beautiful gift."

"The chain is a very heavy one, of fine material and elegant design, and, with the buttons, is valued at \$170. The testimonial is a well merited one to an efficient officer and a genial gentleman."

A Detroit youth bet one dollar that he could climb a telegraph pole and stand on his head upon the top. While lying in bed with his skull cracked he came to the conclusion that he shouldn't like to follow the business as a means of livelihood.

Appointment.

Mr. F. E. MERRILL has been appointed Superintendent of Telegraph and Train Despatcher on the St. Paul and Pacific Railroad, in place of Mr. O. C. GREEN, resigned. Mr. MERRILL will make an able, efficient and popular Superintendent, and the company and employees are fortunate in having such officials in charge of this important department as the retiring and newly appointed Superintendents.

New Publications.

Messrs. RUSSELL BROTHERS have just issued a work entitled "The Home of Cooper and the Haunts of Leatherstocking," by the well known *litterateur*, BARRY GRAY. It gives a well written and profusely and excellently illustrated description of Coopers-town, New York, the home of the celebrated novelist, the late JAMES FENIMORE COOPER, and the scene in which was located the Leatherstocking romances, which have charmed two generations of readers. A likeness of COOPER adorns the titlepage, and the numerous picturesque scenes of the locality through the book add very materially to its interest. It is sold by the publishers at the low price of 25 cents, and cannot fail to have a very large sale.

New Patents.

For the week ending May 14, 1872, and bearing that date.

No. 126,627.—CIRCUIT CLOSING DEVICE FOR ELECTRO-MAGNETIC APPARATUS. Moses G. Farmer, Salem, Mass.

A circuit closing device, by which the ends of an electro-magnetic coil are connected just before the connection with the battery exciting said coil is broken, for the purpose of preventing the spark due to the extra current, substantially in the manner and for the purposes set forth.

No. 126,628.—ELECTRO-MAGNETIC ENGINE. Moses G. Farmer, Salem, Mass.

1. An electro-magnetic engine, so constructed that the extremities of each of the helices of the electro-magnets of the same are united just before their connection with the battery is broken, in the manner and for the purpose set forth.

2. The commutator or circuit changer F, having upon it the rings *m* and *n*, provided respectively with the tongues *p* and *o*, as and for the purpose set forth.

3. The combination of the commutator F, the springs *a' a' a' a' a'*, wires *d f g*, and electro-magnets *A A A A*, all arranged as and for the purpose set forth.

4. The combination of the commutator F, the adjustable plate *K*, and springs *a' a' a' a' a'* attached thereto, as and for the purpose set forth.

No. 126,714.—SWITCH FOR PRINTING TELEGRAPHS. Patrick Kenny, New York.

1. The printing lever B, arranged between the springs *c* and *e*, to establish by its movements alternate connections with the magnets A and H, substantially as herein specified and described.

2. The printing lever B, arranged between the springs *c* and *e*, in combination with the switch instrument described, and the various printing instruments on same line, substantially as and for the purpose herein described.

No. 126,847.—DUPLEX TELEGRAPH APPARATUS. Joseph B. Stearns, Boston, Mass.

In telegraph apparatus for double transmission, the combination with the relay at each station of a condenser, for the purpose of neutralizing the effect of the return current due to the static induction of the line, as set forth.

For the week ending May 21, 1872, and bearing that date.

No. 127,000.—APPARATUS FOR LIGHTING GAS BY ELECTRICAL SPARKS. John Vassant, San Francisco, Cal.

The combination of a source of dynamic electricity, H, an automatic circuit breaker, K, a condenser, L, and a series of connected electro-magnetic primary coils, *b c d*, with a series of disconnected secondary induction coils, *e f g*, substantially in the manner and for the purposes set forth.

No. 127,041.—FIRE ALARM SIGNAL BOX. George Floyd, Cincinnati, Ohio.

1. In combination with the pivoted detent G H K, for liberating the signaling apparatus of a fire alarm telegraph, I claim the shaft C, operating device U, trigger V W X, and stops Z Z' or their mechanical equivalents, for the object designated.

2. In combination with the interiorly toothed signal wheel M I also claim the circuit breaker O O' *e f*, for the purpose set forth.

No. 127,111.—PRINTING TELEGRAPH. John E. Smith, New York.

1. A shunt applied to the escapement magnet of the type wheel of a printing telegraph for operation, so that, at the moment of printing, the current is diverted from said escapement magnet, thereby rendering the other magnet or magnets in the same main circuit more powerful.

2. A union mechanism for bringing the type wheel of a printing telegraph into harmony with the transmitter, composed of a pin in the shaft of a type wheel, a lever held by light friction on the shaft of one of the wheels of the clock work of the receiving instrument for catching said pin, and a lever or levers moved by electro-magnetism for pushing the first named lever in a direction opposite to that in which it is moved by the clock work.

3. A type wheel for recording numerical quotations with the odd digits, or such of the odd digits as occur as numerators in the fractions used, placed before a fractional sign as regards their presentation to the printing roller or pad, and with the even digits, or such of the even digits as are employed in said fractions placed on the other side of said fractional sign, substantially as specified.

4. The receiving portion of a printing telegraph composed in the main of the shunt union mechanism, type wheel, escapement, clock work, and printing magnet lever and roller, substantially as herein described.

Married.

IRISHMAN—MERRILL.—At the bride's residence, Ogdensburg, N. Y., May 19, 1872, by Rev. H. B. Peters, D. D., Mr. JAMES IREMAN, operator of the Montreal Telegraph Company, to Miss ELIZA MERRILL, all of Ogdensburg.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.

FRANK L. POPE, Associate Editor.

SATURDAY, JUNE 15, 1872.

Automatic Telegraphy.

THE editorial remarks in the last number of THE TELEGRAPHER, in regard to automatic telegraphy, have called forth a communication from Mr. D. H. CRAIG, which we print on another page. We publish this communication with much pleasure, for several reasons. There is a very general desire among the telegraphic fraternity to be informed in regard to the progress and prospects of automatic telegraphy, and Mr. CRAIG gives us a very clear statement of what has actually been accomplished, and what is expected to be accomplished in this direction by the Automatic Company. Then, again, THE TELEGRAPHER being an independent sheet, and with no interests to be injuriously affected by the success of any improvement in telegraphy, discussion of such matters is always welcome in its columns. It is true that Mr. CRAIG inferentially classes us among "old foggy MORSE people," but this, we presume, is only pleasantry on his part, as he is aware how little of the "old foggy" element there is in THE TELEGRAPHER. Our motto is "to prove all things and hold fast to that which is good," whether it agrees with our preconceived ideas and opinions or not.

While the columns of THE TELEGRAPHER have at all times been open to the fullest and freest discussion of automatic telegraphy, we have abstained from engaging in such discussions editorially, because we did not desire to prejudice an experiment which was being conducted energetically, and with great liberality of expenditure, by the parties in charge. We have been aware that in experimental trials very wonderful results have been obtained. We were and are willing to believe that a large percentage of these results will be realized in practical business operations. We have never doubted the practicability of transmitting signals over the wires, within certain limits of distance, at any desired rate of speed. The principal difficulties and obstacles encountered in automatic telegraphy are not in the transmission of the signals; they are in the preparation of the slips, and in the translation and preparation of the despatches for delivery when they have reached their destination. These difficulties have been to some extent overcome by the Automatic Company, but the practical limit of speed must always be not what can be transmitted over the wires in an hour, but what can be prepared for transmission and delivery.

Our good natured allusion to Mr. CRAIG's sanguine anticipations and prophecies of two or three years ago, as the context shows, referred to his anticipations and predictions of a ninety days' campaign, terminating in an utter demolition of the enemy, and a demonstration of the utter valuelessness of all existing systems of telegraphy. As he now acknowledges, the machinery devised at that time, either for preparing the slips or translating and writing out the messages at the receiving office, was exceedingly slow, and necessarily limited very much the capacity of the system for doing business at an infinitely rapid rate and at an infinitesimal cost. We can only repeat what we before said on this point, "Such developments are necessarily of slow growth. They must be made step by step, and difficulties unexpected and unforeseen must be encountered and overcome." Has not the experience of the Automatic Company and of Mr. CRAIG fully demonstrated the truth of these observations? We are not prepared to controvert Mr. CRAIG's statements in regard to the rapidity with which copy can now be prepared and the messages copied and printed from the receiving slips, nor do we wish to do so. We are aware that great advances have been made in these respects, and that the capacity of the automatic system for practical use has been very much increased thereby, but we think that Mr. CRAIG, in his compari-

sons, underrates the capacity of the MORSE system for business very materially. We do not believe that Mr. ORTON would now limit the practical capacity of the system for business at an average of 600 words per hour. On through wires it will, under ordinary circumstances, and with reasonably good operators, more than double that. At its highest average there is margin enough for the automatic system, even if it accomplishes in actual business one fifth of what is claimed for it by Mr. CRAIG and his associates.

We are not arguing against the automatic system. We have already recorded our estimation of its value. That it may realize all that is claimed for it by Mr. CRAIG it has our best wishes. That it may realize in practical operation more than has generally been conceded to it we are not prepared to question. The only way to convince the public is to open the lines and offices for business, and if it is practically demonstrated that telegraph business can be done in less time, more accurately, and at an infinitely less cost, why then the "old fogies" must give up the contest or adopt a similar system, and fight it out on that line till one or the other is used up, or the Government steps in and relieves them all of their telegraphic encumbrances.

We shall cheerfully place on record in THE TELEGRAPHER any advance that is made in Automatic or any other system of telegraphy; and, repudiating imputations of old fogism, our sympathies are with all actual telegraphic improvement—and that the best system will win in the end we have no doubt. If Mr. CRAIG's sanguine anticipations and predictions should in the end fail to be fully realized, the fact remains that, at the very worst, the automatic system will prove a valuable auxiliary upon through routes and crowded wires.

An Important Judicial Patent Decision.

WE reprint on our first page the decision and opinion of Judge BLATCHFORD, of the United States Circuit Court for the Southern District of New York, on the suit of S. F. DAY and H. A. MANN against the Bankers and Brokers' Telegraph Company, for infringement of the patent of S. F. DAY for what is generally known as the box sounder. This is an important decision, as the box sounder, although not so much in favor or so necessary as before the expiration of the patent on the local circuit, is still extensively used. It will be seen that this decision is entirely adverse to the validity of Mr. DAY's patent, and makes the manufacture, sale and use of box sounders entirely free. But little, if any, regard has been paid to this patent heretofore by manufacturers or purchasers, as it has long been regarded as invalid by pretty much everybody except the patentee. It is well that the matter should be judicially settled, however, and the result is an indication of the fate of the PAGE patent, should it ever be pressed to trial by its present proprietors.

Congress and the Telegraph.

OUR Washington correspondent, CAPITOL, gives an interesting résumé in his final letter, which we publish this week, of what has been done, and, fortunately, in most instances, left undone by Congress at the session which has just closed. As far as Congress is concerned the telegraph interests of the country will now have a rest. The postal telegraph schemes were allowed quietly to remain *in statu quo*, as it was evident that nothing could be accomplished at the session which has just closed. The HUBBARD scheme will be brought forward at the next session, and every effort will be made to secure its success, but we do not believe that a majority of the two Houses of Congress is prepared to stultify itself by authorizing the experiment. As we have often said, as between the HUBBARD scheme and a Government telegraph, pure and simple, THE TELEGRAPHER would favor the latter; but we are inflexibly opposed to any unnecessary interference of the Government in the telegraph business. It is better for all concerned, the public especially, that the telegraph interests of the country should continue to be administered and managed outside of Government offices and officials.

All other telegraph matters before Congress went over until the next session—among them the bill granting bounty lands to telegraph employees in the military service of the United States during the late civil war.

With proper effort on the part of those interested this act of justice may be secured at the next session. We would call the special attention of all concerned to the suggestions of our correspondent on this subject.

A New Telegraph Supply and Manufacturing Company.

As will be seen by reference to our advertising columns, the firm of HICKS & SHAWK, of Cleveland, Ohio, has been superseded by "The Telegraph Supply and Manufacturing Company," which is incorporated under the laws of Ohio. The late firm of HICKS & SHAWK has met with very marked success, although it is now but about a year since it was organized, and their business has increased to such an extent as to induce the organization of the new company, which will at once proceed to enlarge its facilities, and will soon have an establishment that will be a credit to the telegraphic profession.

The company also succeeds to the business of "The Automatic Fire Alarm Company of Ohio." Mr. SHAWK retires from the business and Mr. GEORGE B. HICKS will be the manager of the new company. Of Mr. HICKS' ability as an electrician, practical telegrapher, etc., our readers are too well informed to need any special commendation on our part. With abundant facilities and capital, and the able management under which it is inaugurated, there can be no doubt of the ample success of the Company.

The Railroad Gazette.

Messrs. T. WRIGHT DUNNING and Mr. M. E. FORNEY, the able editors of *The Railroad Gazette*, have been associated with Mr. A. N. KELLOGG, of Chicago, in its proprietorship, and hereafter the paper will be published by A. N. KELLOGG & Co.

We have frequently referred in complimentary terms to the *Gazette*, which the liberality of the publisher, Mr. KELLOGG, and the ability and energy of Messrs. DUNNING and FORNEY have made the leading railroad journal of the country. We are pleased to know that it is in a highly prosperous condition, and congratulate its editors upon the recognition of the value of their services, and Mr. KELLOGG upon his good fortune in securing them as partners in his successful enterprise.

The June Magazines.

THE AMERICAN JOURNAL OF SCIENCE AND ARTS.

THE June number of this leading scientific magazine completes the third volume of the new series. It contains contributions of sterling excellence on various scientific subjects, and its synopsis of scientific intelligence is, as usual, very full, and brought down to the date of publication. It also has a number of beautifully executed illustrations, and from the cursory examination we have been able to give it we judge it to be of even greater value than the preceding issues. Published by Professors DANA and SILLIMAN, New Haven, Conn.

PHRENOLOGICAL JOURNAL.

The June number of the *Phrenological Journal* closes the fifty-fourth volume of this excellent family magazine. This number will prove of especial interest to the telegraphic fraternity, as the first article has an excellent portrait of President ORTON, of the Western Union Telegraph Company, with a phrenological and highly complimentary description of his mental characteristics and a sketch of his life.

This number, as usual with this magazine, has, besides the portrait of Mr. ORTON, a fine likeness of Queen LOUISA, of Prussia, and a number of other well executed illustrations. The literary matter is excellent, and the number, as a whole, is a very good one indeed.

THE INDUSTRIAL MONTHLY.

The table of contents of the current number of *The Industrial Monthly* (formerly well and favorably known as *The Technologist*) is varied, useful and entertaining. It is also fully illustrated with engravings, which add much to the interest and value of the work. We are much pleased to see the evidence that this excellent industrial publication is meeting with appreciation and success.

The average speed of transmission attainable by the Morse apparatus in 1845 was six words per minute. It is now more than thirty words per minute, and in some instances nearly fifty have been reached.

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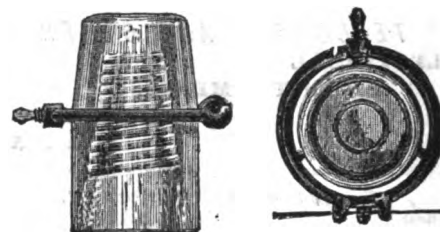
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By R. S. CULLEY,
ENGINEER TO THE
ELECTRIC AND INTERNATIONAL
TELEGRAPH COMPANY.

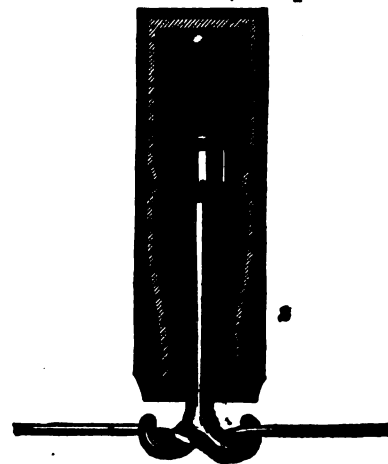
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The Telegrapher

A Journal of Electrical Progress.

Vol. VIII.—No. 44.

New York, Saturday, June 22, 1872.

Whole No. 310

[From the Key West Dispatch.]

Picking up and Repairing the First Cuba Cable.

KEY WEST, May 23d, 1872.

JNO. J. PHILBRICK, Esq.

DEAR SIR: In compliance with your suggestion that the public would be gratified by a brief account of the operations of this steamer, commanded by Captain Barrett, since her arrival here, I seize the opportunity afforded by the overhauling and examination—preparatory to relaying—of the portion of the International Ocean Company's Cable of 1867, recovered during that period, to narrate the principal occurrences in it.

The Suffolk arrived here April 23d, and after taking aboard grappling and buoy rope and other stores, and having secured the services of Mr. John Geiger as pilot, started on the following day for the grappling ground, convoyed by the U. S. S. steamer Bibb, Acting Master Platt, commanding. A proper position having been taken the grapnel was let go, and after dragging about half an hour brought up a rock, and losing at the same time one of its prongs. It was then deemed necessary to go farther out, believing that a better bottom would be found. The grapnel was then let go again, and after drifting some distance the indications were unmistakable that she was again fast, this time it proved to be the cable, in some 25 fathoms water. It was brought to the surface and preparations made to cut it, when the sudden breaking of the feed pump of the main boiler rendered it necessary to attach a buoy to the cable, let it go, and return to port for repairs. These were concluded by the 29th, and again moving out, the cable was brought to the surface from a depth of 52 fathoms, and about eight and a half miles from Key West—the landward end securely buoyed and the seaward end brought to the picking up drum—all within four hours from the time the grapnel reached the bottom. Underrunning then commenced toward Havana, and continued ten or twelve hours, when it was discovered that one of the crossheads of the picking up machine was so weakened as to render a new one indispensable, and immediately, too. Havana was, of course, the only place to obtain this, so the cable was buoyed out and let go in 72 fathoms water. The cable party returned to Key West in the Bibb, and the Suffolk went her way to be repaired. One and a half miles of good cable was saved. During the Suffolk's absence operations were commenced on the north side of the island, by means of the Bibb and the steam launch of the Canandaigua, kindly furnished by Captain Thompson, commanding, and several defective places cut out, and the line of the cable over the shoals actually determined by Mr. Lee, of the Bibb. There still being time to spare, the Bibb proceeded to Punta Rasa and recovered one and a half miles of cable in good condition—stopping at the point outside the harbor, from which it is intended to carry the cable by the south beach of Sanibel Island, in the track of the International Ocean Company's cable of 1869, instead of, by its present exposed route, to Punta Rasa. Having left a prominent beacon to mark this point, the Bibb returned to Key West, and on May 12th the Suffolk appeared in the lower harbor. The non-appearance of the cable party induced Captain Barrett to commence picking up the buoyed cable end, and underrunning it with such success that, by the arrival of the Nonpareil, he had nine miles of good cable on board. In a short distance we passed from the heavy to the light cable, and soon brought up a huge tangle, and immediately followed the bare end. From this time commenced our really difficult work, and after spending a week grappling various places, we at last recovered the cable, and returned to Key West with eleven and a half miles of good cable, which, being spliced to the new and tested, were coiled in the tanks for relaying. This is designed to connect with the Havana end, and from thence paying it out direct to Key West.

I omitted to relate the manner of recovering the cable in deep water. It was as follows: All our drags except the last two were made with the idea of recovering and still underrunning toward Havana; but the bottom—the great obstacle to all cable work—being found bad, it was thought best to pick up between Havana and the first fault out of it and underrun northward. The ship's position was taken with great care and the grapnel let go; but Captain Barrett, who is

precision itself, wishing to verify his longitude by an afternoon observation, enough rope was let go to nearly anchor the ship. We soon discovered that the current was setting eastward, and an observation placed us eastward of the line on the maps. The grapnel was raised with the object of taking a new position; it was quickly apparent that something was coming up, and shortly after the cable hove in sight. It appears to have been laid two miles east of its position on the map, and our almost imperceptible drift, while waiting for an observation, carried the ship just to it. A buoy was attached to the northern end, and the tests revealing a fault between the ship and Havana, underrunning was commenced southward; but the end was found within half a mile from where we cut, and it was necessary to pick up the buoy and underrun northward instead, which was done as I have described.

This last break corresponds with the position of the first fault out of Havana, though a trifle nearer it than the electrical tests from the Cuban shore indicated—an inseparable feature of electrical tests—which accounts for the Suffolk's having grappled on the wrong side of it. But what at first appeared a misfortune really proves to be a benefit, for we should not have had enough cable to reach shore without what we afterwards saved; our buoy, which we should have imagined secure, would have floated off with the small fragment attached; grappling would have to be resumed to obtain enough cable to complete the work, and the whole enterprise indefinitely prolonged. As it is, we know the position accurately, the bottom is soft and favorable, and the depth of water the same from which we recovered the cable—476 fathoms—and we have forty-eight miles of sound cable to connect points only thirty miles apart. I am much elated at this week's work, especially when I think that, in cable saved alone, it has made the International Company some sixty thousand dollars richer, and look to a successful termination of the work on both sides of the island in about a fortnight. The cable recovered tests admirably, and there is hardly a feature of the situation I could wish changed. There only remains some ten miles of cable unrecovered that could be of any use to us, and we shall not take much trouble to recover that unless communication with Havana should be established almost immediately, and the weather peculiarly favorable.

But I have run on to an inconceivable extent, and must bring my hobby to a halt ere I ride him to death. Hoping these few facts may interest the public, as you assure me they will, I remain, my dear sir,

Faithfully yours,

THO. WHITSIDE RAE.

The Telegraph to Australia.

A CORRESPONDENT of the *Railway News* writes that "Profound dissatisfaction exists in several of the Australian colonies with the present state and future prospects of telegraph communication with the United Kingdom. A cable has indeed been laid from Madras to Singapore, thence to Java, and thence to Port Darwin, on the northwest coast of Australia; but Port Darwin is 1,800 miles distant from the telegraphs of South Australia, and about 900 miles distant by land from those of Queensland; it is practically unapproachable, the intervening country having hardly ever been traversed, even by individual travellers, from any quarter whatever, and being in a complete state of nature and inhabited only by hostile aborigines. One would have supposed that, under these circumstances, a cable would have been laid from Port Darwin round the northern coast, to the terminal station of the Queensland telegraphs, at the head of Gulf Carpentaria, a distance of rather over 900 miles. But the British Australian Company got entangled into a complicated and most injudicious agreement with the South Australian Government, under which South Australia undertook to extend her telegraph system to Port Darwin by the 1st of January last, and the company undertook not to establish telegraphic communication between Port Darwin and Queensland; the object being, of course, to give South Australia a complete monopoly of telegraphic communication between the whole of the Australian colonies and the rest of the world.

"It may be easily imagined that this attempt has been most strongly resented by several of the colonies. Queensland and New South Wales would have to telegraph south to Adelaide and thence north to Port Darwin—an enormous deviation in the case of Queensland; besides which, a line of telegraph having its termination in South Australia could not in any way accommodate the interests of the Eastern colonies. The cause of complaint, therefore, against the projected system, is most valid and reasonable. South Australia did not, however, complete her overland system within the specified time, but in order to prevent the company extending its line to Queensland the Government promised the latter 5 per cent. upon its capital until the completion of the land line. That offer was neither accepted nor rejected till within the last few days, when, hearing that the Government of Queensland had asked the Legislature to authorize a guarantee of interest to be given upon the cost of a direct through line to Java, the company got frightened, rejected the offer of 5 per cent., and claimed its privilege of extending its cable to Queensland. But, in the meanwhile, Queensland and New South Wales had directed their attention to the great advantages of having a line of their own, and in any case to the necessity of duplicating the line to India, as a security that the communication shall not be interrupted; the proposal of the company, which would have been gladly accepted six months ago, now comes too late, and it is all but certain that it will not be entertained for a moment. There can be no question that a sound judgment has been exercised by Queensland in the matter. Once that a duplicate line has been guaranteed to Java, its extension to Singapore will be immediately secured, as the Dutch land lines in Java and Sumatra, either constructed or in course of construction, which reach nearly opposite to Singapore, are within one hundred miles of it, and there can be no doubt that it will be speedily extended to Rangoon and Calcutta. This will also prove a great boon to India, as at present the communication of that vast country with Singapore and China depends upon the single cable between Madras and Singapore. The enormous trade of Bengal with Singapore and China, and the countries to the eastward, has, moreover, no direct line of telegraph, and has to make use of the very devious route via Madras. The Australian colonies have sadly neglected the question of telegraphic communication, but now that they have bestirred themselves they will be able to take advantage of all the experience which has been previously gained, and to establish a thoroughly efficient system. They will certainly duplicate their line the whole way to India, and obtain besides the great advantage of competition, which, however detrimental it may prove, at least in the first instance, to shareholders, is nevertheless attended with most beneficial results to the public at large."

The Lost West India and Panama Cable.—Unsuccessful Attempts to Recover it.

THE Kingston, Jamaica, correspondent of the *New York Herald* writes to that paper, under date of June 10th, that the steamer *International* has again returned into port without any tidings of the lost Colon cable, to recover which at least a dozen attempts have been made. The whereabouts of the *Dacia* is not known at all, and people here begin to despair of the cable being ever found. This feeling is deepened by the news that the brig *Venture*, from Demerara to Halifax, had picked up, on the 9th of May, adrift in the Gulf Stream, a buoy, to which was attached 700 fathoms of chain, and about 500 fathoms of telegraphic cable. There is no doubt that it is part of the lost cable, which has been swept far away from the latitude in which search has been made for it. Studdy Leigh, the great telegraphic engineer, who has just touched here on his way to the Pacific, for the purpose of laying down several new lines, reports that a new enterprise has been entered upon for laying down a cable between Colon and St. Thomas, and that it will be carried out and in working order long before the connection between Colon and Jamaica can be made. The cable, he states, has already been manufactured, and is only left to be conveyed to the two points of connection, and then to be paid out.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Action upon the Student Question by the D. L. and L. M. R. R. Telegraphers.

SOUTH LYONS, MICH., June 3.

TO THE EDITOR OF THE TELEGRAPHER.

THE telegraph operators of the Detroit, Lansing and Lake Michigan Railroad Company, whose signatures are attached to the preamble and resolutions herewith, knowing THE TELEGRAPHER to be devoted to the interests of the telegraphic fraternity generally, desire that their action shall be published in its columns, with the signature of each and every operator attached. It is hoped that other operators will follow our example, and thus, in time, bring the profession back to where it formerly was, thereby benefiting all concerned.

Whereas, the Western Union Telegraph Company are manufacturing operators at their institution in New York, with an idea of effectually reducing the salary of operators generally, and being satisfied that too many are now seeking tuition, thus injuring us by introducing into our ranks men of inferior ability, at lower rates of compensation, thus driving many who are worthy out of the business; therefore,

Resolved, that we, the undersigned, do pledge ourselves not to learn any one to telegraph, except upon the recommendation of the Superintendent of the line on which we are employed, believing that he will select none but those who will be a credit to the profession, and who will command salaries equal to their ability.

(Signed),

CHARLES DRAKE, Detroit.
GEO. L. MYERS, "
ED. A. STERLING, "
H. A. BEAUBIEU, "
F. M. HUNTINGTON, Plymouth.
J. A. CARLIN, So. Lyons.
J. W. TAYLOR, "Bn."
JAMES HUGH, "H."
HENRY HIGLEY, "
W. M. HORTON, "Fn."
C. W. HIGLEY, Williamston.
G. E. HUNTINGTON, Okemos.
Miss CARRIE EDWARDS, Lansing.
JNO. M. MYERS, Lansing City Office.
J. E. CORBETT, North Lansing.
J. A. SMITH, Grand Ledge.
W. H. CAMPBELL, Portland.
WM. CHURCH, Lyons.
F. W. COMPTON, Ionia.
W. H. COLLINS, D. & M., Ionia.
JNO. S. GUNN,
R. FARRELL, "G."
E. M. CORBIN, Coral.
W. ROBBIE, Howard.

The above preamble and resolutions were forwarded to Mr. J. W. Bromley, Supt. of Telegraph of the road, who replied as follows:

"DETROIT, LANSING, AND LAKE MICHIGAN R. R., }
"SUPT'S OFFICE, DETROIT, June 1, 1872. }

"OPERATORS ON D. L. and L. M. R. R.

"I have your resolution, with the signature of every operator on the line.

"New wires are constantly being put up, and new offices almost daily being added, which, of course, call for a corresponding increase of operators; hence it falls upon some to become teachers of the art. I agree with you in reference to the policy of the W. U. Co. in selecting material for the manufacture of their operators. The profession is far more liable to suffer from the quality than from the quantity of its members, and those who teach should be careful to satisfy themselves that pupils possess the education and business qualifications necessary to make a successful operator, and command a remunerative salary.

Yours,

J. W. BROMLEY, Supt. Tel."

If telegraphers would be more careful as to the qualifications of those whom they induct into the telegraphic fraternity there is no doubt but that the result would be highly beneficial. J. A. C.

Picking up and Relaying the First Cuba Cable.

KEY WEST, June 8.

TO THE EDITOR OF THE TELEGRAPHER.

I SEND to you by this mail the *Key West Dispatch*, containing a brief account of the last operations of the steamer Suffolk in taking up the International Ocean Telegraph Company's 1867 cable. Mr. T. W. Rae is too modest to say anything of himself in the account published. I accompanied the expedition, and can bear testimony not only to the indefatigable labors of Mr. Rae, but also to his scientific attainments in testing conductivity of wires, and also of the degrees of insulation of the covering, as well as in treating leaks or breaks, and in the general arrangements while under-running the cable.

I feel proud that an American, especially one so young, should prove himself equal, under all emergencies, to the renowned English electricians, to whom I do not think he is inferior in any practical or scientific knowledge useful in the management of deep sea cables. It is to be hoped that Americans will enter into this cable business, and prove that in it we are equal, at least, to the would-be foreign monopolists.

Mr. Rae is now engaged in testing and repairing the recovered cable. He will leave on the Suffolk in a few days to pick up the Havana end of the cable, forty miles from here, and then splice on and lay the cable to this place. He will then proceed to lay another cable from Key West to Punta Rasa. When these are completed there will be two cables in operation between Cuba and Florida.

I wish I had time to send you a description of the Suffolk, and her machinery and appliances for under-running and laying in as well as for paying out cable. I may, at some future day, send such a description for THE TELEGRAPHER. W. C. B.

The Student Question.

BURLINGTON AND MISSOURI RIVER R. R., }
June 10. }

TO THE EDITOR OF THE TELEGRAPHER.

I HAVE a few words to say to railroad operators on the student question. I think the railroad operators in this part of the country are turning out too many *plug students*. Am sorry to say that on this line (the B. & M.) there are several operators who have from one to three students, from whom they get from ten to twenty-five dollars each for teaching them telegraphy. It is sometimes necessary for railroad operators, who do some commercial business, to have a student for a messenger, but there is no excuse for their taking more than one at a time; neither is there any excuse for men recommending students for employment when they are hardly qualified for messengers. And, although our Superintendent prohibits taking students without his permission, it is done just the same; and when they get so they can write some with the key, and read a little by sound, the operators recommend them for situations, and very often the "plug" gets it. This is shameful, and should be stopped in some way. I wonder if other railroad lines are as badly infested as this with plug operators. I wonder, also, if other railroad lines have as many operators as this road has who are *dead broke* all the time, and always wanting to borrow money and never pay any. There is nothing wrong in being without money. We are all liable to be impoverished by sickness, accident, or other causes, but this thing of being always impecunious, and leaving unpaid board bills at every place they work at, is a disgrace to the profession, and destroys its credit. Why cannot telegraphers raise the credit of their profession to a higher standard by paying up their bills honorably? However low our salaries may be, we ought to save money enough ahead to "pay up" when we are compelled to "move on."

CHAWLES.

Train Despatching.—No Use in the Proposed Convention of Train Despatchers.

OMAHA, NEB., June 9.

TO THE EDITOR OF THE TELEGRAPHER.

THERE has been so much discussion of the subject of train despatching in the columns of THE TELEGRAPHER that I take the liberty of asking a small space in which to give my experience, and express my views upon it.

In the first place, in my opinion, the Convention of Train Despatchers, which has been proposed to be held, is uncalled for, and would be of no use. Each railroad company operates its own road in its own way, and the train despatchers who have of late been brought into such prominence are merely subordinate officials, and under the immediate supervision and direction of the Superintendent; and when he says "No" to any proposition in regard to the management and running of trains, it is final, and the train despatcher is compelled to subside.

I am an old railroad conductor, and have run trains for fifteen years, and have also been relief train despatcher. My experience teaches me that the safest, most simple, and best way to run trains, is to employ good, competent conductors and telegraph operators, pay them good salaries, and, my word for it, no carelessness or accidents therefrom will ever occur. Incompetent employees and insufficient compensation give rise to carelessness and indifference, which result disastrously under any system; and the idea that the safety of trains and the interest of railroad companies rest in the hands of train despatchers is all nonsense. Good railroad men and good telegraph operators, with sufficient living rates of compensation, will operate any railroad with safety and to the interest of the company. CHAS. W. COOMBS.

A Telegraphic Base Ball Club.

NEW ORLEANS, June 10.

TO THE EDITOR OF THE TELEGRAPHER.

THE telegraphers in the Western Union office in this city have organized a base ball club and named it "Morse," after the late Professor Morse. The following are its officers; J. T. Alleyn, President; J. E.

Wright, Vice-President; Hugh Irvine, Treasurer; Taylor Adams, Secretary. Sup't D. F. Flanery is an honorary member.

The club has played four match games up to the present time, which they have won, very handsomely beating their opponents.

Their last game was with the Southern Express Company Club, which was played on the 2d inst. The following was the score:

MORSE.	O.	R.	SOUTHERN EXP'S.	O.	R.
Landy, a. s.	2	9	Frey, 3d b.	2	1
Whitford, r. f.	2	10	Nichols, c. f.	3	0
Blaney, 2d b.	1	10	Small, 1st b.	2	1
Brooks, 3d b.	2	10	Vanderford, p.	2	1
Murphy, 1st b.	1	10	Hutchings, 2d b.	3	0
Beecher, c. f.	3	9	Elliott, r. f.	3	0
Fisher, p.	4	8	McCallough, a. s.	1	0
Culligan, c.	1	12	Nelson, l. f.	1	0
Smith, l. f.	2	2	Hands, c.	1	1
	18	86		18	4

Innings..... | 1 | 2 | 3 | 4 | 5 | 6 | T

Morse..... | 7 | 14 | 13 | 16 | 16 | 20 | 86
Southern Express..... | 0 | 1 | 3 | 0 | 0 | 0 | 4

Clean Home Runs—Morse—Fisher, 1. Umpire, J. T. Alleyn.
CRESCENT.

Personals.

Mr. J. McDERMOTT has been transferred from the Philadelphia to the Baltimore office of the Franklin Telegraph Company.

Mr. W. J. COOK has resigned from the Memphis, Tenn., office of the Western Union Company, and accepted a position with the Alabama Central R. R., at Meridian, Miss.

Mr. GEO. F. DURANT has been appointed Superintendent of the New York Division of the American District Telegraph Company.

Mr. W. H. HEMPHILL has resigned his position as manager of the Tiskilwa, Ill., office of the Great Western Telegraph Company, and accepted a situation as agent and operator at Unionville, Iowa, with the Chicago and Southwestern Railroad Company.

Mr. VIRGIL A. KREPPS, telegraph operator, who was sentenced to eight years and seven months' imprisonment for an assault upon a young lady in Brooklyn, N. Y., with intent to kill, has had his sentence commuted to four years by Gov. HOFFMAN.

Mr. ED. G. STEVENS is manager of the General Telegraph office of the Atlantic and Great Western Railroad at Meadville, Pa.

The Telegraph.

The London (England) Postal Telegraph Department.

THE London Postal Telegraph Department is undoubtedly the most extensive in the world. The present central office is in Telegraph street, a narrow thoroughfare on the eastern side of Moorgate street. It resembles the warehouse of a back street more than a great telegraph building. The business has outgrown its present location, which, in fact, was never suitable for the purpose to which it was adapted. To this centre are brought the wires from all the metropolitan district stations, and also the wires that connect London with every provincial town in the kingdom.

A new office is being built for the department in St. Martins-le-Grand, which will be both adapted to the necessities of the business and furnish more adequate accommodation.

The wires are carefully tested, and a record kept of their condition from day to day. The Wheatstone bridge and resistance coils are used for testing the conductivity and insulation of the lines at all the important stations. These are manufactured by Elliott Brothers, of London, and the tangent galvanometers at Silvertown, and by the works connected with the department.

The metropolitan department occupies two rooms. In this department the instruments are nearly all of the description known as ink recorders. There are also a few sounders, of a somewhat peculiar construction, used, and one veritable pony sounder (so familiar to American operators) may be seen here. Each instrument is provided with an indicator and a very excellent copy holder. The former shows the number of the circuit, the point to which it extends, and the hours during which the circuit is operated daily.

This department is worked exclusively by female operators, of whom about 260 are employed here.

In the metropolitan division is also included the pneumatic tube system, which is quite extensive, and has proved a valuable adjunct in carrying on the enormous business of the department. These tubes extend to various parts of the city, for distances of from half a mile to two miles, and are used for sending the messages which accumulate in the central office for different parts of the city to local or sub-offices for distribution. Messages are likewise received at these local offices, and, by means of the pneumatic tubes, forwarded to the central office.

In one of the rooms of the metropolitan department Varley's Chronofer or Time Sender is in operation. It would be difficult to give an intelligible idea of the

mechanism of this instrument without an elaborate description and the use of illustrations. It receives the time from Greenwich, and at a certain hour each day sends the time simultaneously over twenty circuits.

One room is devoted especially to the business of reporting races, and is known as the "racing room." The telegraphing connected with the more important sporting events in England is enormous. As an illustration of this it may be stated that, during the recent Chester races, about 6,000 messages were received in this room in one day.

In what is known as the Provincial Gallery about 650 operators are employed. A system of tapes, similar to those used upon printing presses, are in use here, to distribute the messages to the several points from whence they are to be telegraphed, as may be required.

There are in use at the central office nine different telegraphic systems, viz: The Morse, Hughes (printer), Wheatstone dial, Wheatstone automatic, Bright's bell, Bright's single bell, Wheatstone's single needle, and the Cook and Wheatstone pneumatic. All the systems are worked on the open circuit—no closed circuits being used.

The Wheatstone automatic has been found valuable, and is considerably used. The puncher is a beautiful piece of mechanism. About thirty of the automatic instruments are in use, and the Wheatstone is the only one that has been tried in England that has been found to work well. The press reports are mainly forwarded by the automatic system, and it is used also in commercial telegraphing on circuits which are very much crowded with business. It is claimed that 100 words per minute are transmitted by this system, though the speed depends somewhat upon the length of the circuit. On the long circuits a few of the Hughes printers are used, but this instrument has never come into as general use in England as upon the Continent.

The Switch Board shows 620 terminal wires in this great central telegraphic office, and over 3,000 cells of battery are used in the building; these are nearly all Daniells or the Leclanché batteries. For open circuits the Leclanché is preferred.

There are in all about 1,000 persons employed in the different departments, and when suitable accommodations can be provided this number will be considerably increased.

The Fourth Atlantic Cable.

By an arrangement between the French Atlantic Cable Company, the Anglo-American and the New York, Newfoundland and London Telegraph Companies, the former is about to lay a fourth Atlantic cable from Land's End, England, to New York. The cable will touch at Halifax, Nova Scotia, en route, and be landed on the south shore of Long Island, in the vicinity of Hog Island Inlet. Thence it is to be brought underground along the line of the South Side Railroad, to the foot of Broadway, Brooklyn, E. D., across the East River to the foot of Grand street, and thence to the office of the Western Union Telegraph Company on Broadway. The necessary permissions have already been obtained from the municipal authorities of New York and Brooklyn, the railway companies, and others interested.

Applications for permission to land the cable on the coast of the United States to the United States authorities, have received favorable responses. The entire business of sending and receiving messages will be done at the Western Union office. The new cable is to be in working order in the summer of 1873.

As the contract for laying the cable is made with the Telegraph Construction and Maintenance Company, which has successfully laid a majority of the submarine lines, the Great Eastern will probably be employed in laying the new cable.

The French Company seeks to put New York in direct communication with England, and for this reason will place underground the line from Long Island into this city, preserving it from atmospheric electricity. The underground line, being in all essentials equal to a cable, admits of messages running through it from the cable; whereas, if the new cable were connected with an air line, all messages would have to be retransmitted at the landing place, and have no practical advantage over a cable landing at Duxbury, or elsewhere along the United States coast. The French Company pledge that the late step of taking off the 10 word limit will be followed up with a still more considerable reduction of the tariff when the new cable shall have been laid. The cost of the cable will be \$3,500,000.

A Telegraph in a Tunnel.

THE successful and thorough insulation of telegraph lines in wet tunnels has heretofore been a problem whose solution was attended with much difficulty. In Europe the wires are covered with gutta percha and placed in wooden troughs or boxes attached to the walls of the tunnel. In this country the wires have usually been carried over the top of the tunnel, which, in many instances, is a very difficult and expensive piece of work. Recently the telegraph line of the Lehigh and Susquehanna R. R. in Pennsylvania has been carried through the Nesquehoming tunnel, 4,000 feet in length, upon Brooks insulators, and, notwithstanding the dampness and moisture, not a trace of leakage is perceptible. This piece of telegraphic engineering was executed by a railroad man, and has turned out to be an unequivocal success.

Resignation of an old Manager.

MR. JOHN HORN, manager of the New York Stock Exchange Western Union office, resigned that position May 31st, and intends to retire from the telegraph business. He entered the telegraph service over twenty years ago, in the employ of the Montreal Telegraph Company at Montreal. When the line was first opened between Montreal and New York he was, in October, 1857, sent to New York as manager and operator under the late James Eddy, of the old American Telegraph Company. He has been manager of the Stock Exchange office since August 1st, 1865, and has had charge of that office until his retirement.

Mr. Horn has collected one of the best libraries on electricity and the telegraph to be found, and has also a large collection of portraits of eminent electricians and telegraphers, from the earliest dates, an account of which was published in THE TELEGRAPHIC some time ago. He has always evinced a lively interest in everything affecting the welfare of the fraternity.

Hydro-Electric Submarine Cable.

M. FERDINAND TOUMMASI, 69 Avenue de l'Alma, Paris, an engineer and inventor of considerable eminence and repute, has just perfected an invention under the above title, which is attracting attention and likely to excite considerable interest. He proposes to employ it for submarine telegraphy, and to substitute for the ordinary electric conductor, the cable, a simple tube of copper, containing, as it were, a thread or column of water, which is stated to transmit effectually and instantaneously every impulse communicated by pistons; and not only that, but to permit such impulses to be transmitted in opposite directions at the same time. M. Toummasi's experiments have been conducted upon a limited scale, but he affirms that he can absolutely obtain the following results: 1. A speed of transmission of 600 signals per minute, even at 4,000 kilometres distance (nearly 2,500 miles, English). 2. Simultaneous exchange of correspondence—any number of despatches being effected at once by the same cable. 3. Adaptability to any recording instrument whatever—Quadrant, Morse, Printing, etc.—quite automatically. 4. Economy in first cost, durability and increase in returns.

Foreign Telegraphic Notes.

A PROSPECTUS has been issued in London of the Economic Telegram Company (Limited), with a capital of £150,000, in shares of £15, to purchase and carry out an invention by which nearly all kinds of telegraphic messages "can be so effectually condensed as to send with perfect accuracy from five to ten ordinary telegrams as one." The business of the company will be merely that of an agency, incurring no cost of construction or maintenance of cable wires. Under these circumstances, as the sum to be paid for the invention is not stated, the necessity for raising such an amount of capital as £150,000 is not perfectly clear.

A firm at Barranquilla have entered into a contract with the government of New Grenada to lay a submarine telegraph cable from Aspinwall to Carthagena and New Grenada, South America.

Telegraphic Brevities.

DURING a thunder storm Friday afternoon, 14th inst., four of the through telegraph wires of the Western Union Telegraph Company, between Providence, R. I., and Hartford, Conn., were burned off, and a portion of the electric fluid came into the battery room, directly over the reporters' room of the Providence Journal, and made a lively snapping and cracking on the lightning arresters, and its effect was felt, but without injury, in the operating room on the ground floor.

The Marine and Inland Telegraph Company has built a line to and established an office at Long Branch, N. J., for general telegraphic business.

On Thursday, June 13th, 2,155 messages were exchanged between New York and Boston. Of this number Mr. Barrett sent, with the Phelps Printing Instrument, in seven hours, 606 messages, being at the rate of over 86 messages per hour.

A telegraph line has recently been completed from Sunbury to Hasleton, Pa., along the line of the Danville, Hasleton and Wilkesbarre Railroad, under the direction of Mr. H. R. Rhoades, of the Philadelphia and Erie Railroad. Emminger's new pattern of glass insulators are used, but are found more liable to fracture than the common kind. The line is worked with Calland batteries.

A handsome telegraph office has been fitted up in the new depot of the Philadelphia and Erie Railroad at Sunbury, Pa., for the use of the railroad operators.

A dividend of \$3 per share has been declared on the stock of the Franklin Telegraph Company.

Portrait of the late Professor Morse.

SARONY has just finished an excellent head and bust, in crayon, of the late Professor Morse. It has all the artist's vigor and freedom of touch, and, altogether, is the most satisfactory portrait of the great inventor we have seen, either as a drawing or in color. The artist gives us his subject as he was ten years ago, before de-

cay of body had set in strongly, and the professor was yet at the height of his intellectual vigor. This we much prefer to the portraits of him in his physical decadence, so many of which have been turned out lately by our photographers. Sarony is to have this portrait reproduced by the carbon process—an excellent medium of reproduction—and published. We cannot doubt the success of this venture.—The New York Evening Mail.

A New Application of the Electric Burglar Alarm.

MR. S. J. HOFFMANN, an operator in the Western Union Telegraph office at Mobile, Ala., has recently patented a novel and very ingenious application of the Electric Burglar Alarm to the safes carried in railway trains, by express messengers, paymasters, etc. The circuits are so arranged that either the opening of the safe, or its removal from its proper position by any unauthorized person, will instantly sound one or more alarms, which may be placed in any position on the train. This invention is equally applicable to portable safes, used for any other purpose, as in dwellings or offices. By the use of a peculiar lock switch the safe may be thrown out of circuit, and opened without operating the alarm by the person in charge, having a proper key in his possession. This invention affords absolute security against a species of robbery at one time very common—that of throwing the safe overboard from the train and afterwards plundering its contents at leisure.

The differential galvanometer was invented by M. Becquerel.

An English inventor proposes to stop runaway horses by giving them an electric shock from an induction coil. It never fails if the shock is strong enough.

New Patents.

For the week ending May 28, 1872, and bearing that date.

No. 127,165.—BURGLAR ALARM APPARATUS FOR PORTABLE SAFES, etc. Samuel J. Hoffman, Mobile, Ala.

1. The combination of a moveable safe, or other receptacle for the deposit of valuables, with an electric circuit and one or more alarm apparatuses, in such a manner that the said alarm or alarms will be sounded either by the opening or removal of said safe, substantially as specified.

2. In combination with the above, a circuit closer operated by a lock, for the purpose of rendering the alarm inoperative when the safe is to be removed or opened, substantially as specified.

3. The combination of a safe or other similar receptacle and its attachment, constructed and arranged substantially as described, with the metallic plates C and K, in the manner and for the purpose herein set forth.

4. The combination with a door of the arm Q and the flexible arms q' and q'', in the manner and for the purpose herein specified.

5. The combination of the arm R and springs r' with the sash of a window, in the manner and for the purpose herein specified.

No. 127,170.—ELECTRICAL WOOD DIVIDER. George Robinson, New York, N. Y.

1. The process of dividing wood by a platinum or other wire heated by electricity and applied in the manner described.

2. I also claim an electrical wood dividing apparatus, consisting of a platinum wire, insulated handles, and copper wires connecting the platinum wire with the positive and negative poles of a battery, substantially as specified.

No. 127,369.—ELECTRO-MAGNETIC MOTOR.—William H. Richardson, Albany, N. Y., assignor of one half of his right to Henry G. Haskell, same place.

1. The revolving wheel D, carrying a series of sliding armatures, constructed substantially as herein described, and for the purposes set forth.

2. The armatures F F, having their outer ends f f made in the form of a scroll or bevel, as and for the purposes herein specified.

3. The combination of the sliding armatures F F and stops f' f', substantially as and for the purposes described.

4. The electro-magnets G G, having the front end of their cores g g formed to correspond to the scroll form or bevel of the armatures, for the purpose of increasing their attractiveness.

5. The electro-magnets G G, constructed with heads i i, arranged diagonally across their cores g g, and their helices i i wound to correspond thereto, as and for the purposes herein described.

6. In combination with the electro-magnets G G, the intermediate bar g', constructed and arranged as and for the purposes herein specified.

7. The combination of the electro-magnets G G with the bolts J J and K K, arranged as and for the purposes herein set forth.

8. In combination with the electro-magnets G G and the bolts J J and K K, the non-conducting bushings, arranged as and for the purposes described.

9. The combination of the non-conducting circuit point holder M, constructed as herein described, with the circuit point N N, as and for the purposes herein set forth.

10. The combination of the circuit points N N, constructed as herein described, with the adjusting screws s s and springs s' s', or their equivalents, as and for the purposes herein specified.

11. The combination of the circuit wheel L with the circuit points N N, adjusting screws s s, and springs s' s', constructed and arranged to operate substantially as and for the purposes herein described.

12. The combination of the circuit point holder M, arm O, and adjusting screws o' o', as and for the purposes set forth.

13. The combination of the circuit wheel L with the spring P, constructed and arranged to operate substantially as and for the purposes specified.

14. The combination of the electro-magnets G G with the connecting wires R R, constructed with coils or their equivalents, for the purpose of equalizing their lengths and action, as herein described.

15. The combination of the revolving wheel D and sliding armatures F F with the electro-magnets G G, arranged tangentially around the circumference of the wheel, as and for the purposes specified.

16. The combination of the revolving wheel D, armatures F F, and electro-magnets G G with the circuit wheel L, circuit point holder M, and circuit points N N, when constructed and arranged to operate as herein described.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.

FRANK L. POPE, Associate Editor.

SATURDAY, JUNE 22, 1872.

Increase of Atlantic Telegraph Cable Facilities.

THE progress and extension of the telegraph business, of which we have spoken in late issues of THE TELEGRAPHER, is still further demonstrated in the demand for additional facilities for communication between this country and Europe. In compliance with this demand, which had become too urgent to be longer neglected, and to provide for the continued increase of the business, under an arrangement with the Anglo-American and New York, Newfoundland and London Telegraph Companies, the French Atlantic Cable Company are about to lay a second cable from England to a point on Long Island, from whence it is to be continued by an underground line to this city, and is to be worked in a direct circuit from here, thus avoiding the repetitions requisite upon the Atlantic cable lines already in operation. When this cable is completed, which it is to be during the next summer, New York and London will be able to converse directly and without the assistance of intermediate stations and operators.

Although the cables now in use are sufficient to accommodate promptly all the business which is at present offered them, the use of the ocean telegraph is constantly increasing, and probably the time is not distant when the three cables will be found insufficient for the purpose. It is, therefore, undoubtedly wise for the cable combination to provide in advance for this increase and prevent any blocking of the lines. By this means, also, the danger of an interruption of communication by accidents to the existing cables will be as far as possible guarded against. The suspension of operations at one time for several months, on the two Anglo-American cables, shows that this provision is not uncalled for, although such alterations have been made in the route of the shore ends of those cables as it is expected will, in the future, very much decrease the chances of the recurrence of that misfortune. At the worst, with the four cables there is little probability that the combination will, at any time, be left with less than two cables on which to transmit their business.

Beside the fourth cable, to be laid by the French Company, as above stated, it is understood that a new competing company has also a cable under contract, to be manufactured and on board the vessel for laying by the first of next June, and to be laid by August 1st, 1873. It is reported that the entire capital stock of the new company, five and a half millions of dollars, has been subscribed, and that one million of dollars has already been paid on the cable. This cable, it is also understood, is to land on Long Island, and is to work direct with this city. With this and the new French Company's cable we shall have five Atlantic cables, and these will probably suffice for all practical and profitable purposes for some years to come.

If the competing cable is really to be laid, as stated, it is important that the telegraph companies not included in the Western Union combination should, in the meantime, perfect an organization and an extension of their lines, so as to cover substantially the whole country, in order that they may secure the advantages of Atlantic cable communication as a part of their system. The French Atlantic Cable Company were forced into a combination with the Western Union and Anglo-American Companies, from the fact that the competing companies could not afford them the necessary facilities for their business in this country. It is true that these facilities have since been extended and increased, but they are operated by a number of independent companies, which do not always work together harmoniously or to the best advantage. Obstacles have so far intervened, which have frustrated all attempts at the combination of these companies, notwithstanding the evident advantages attending such a combination.

Now that they are more prosperous than heretofore, and the prospects for the future are brighter, another and earnest effort to accomplish it would probably be more successful. With such a combination, and a European connection, there could be no reasonable doubt that the business would prove remunerative, the telegraph business of the country be fairly divided, and the interests of the public and of the patrons of the telegraph better served than would be possible in any other way.

Notwithstanding previous discouragements, we yet hope to see this accomplished, and at no distant day; and, in the future as in the past, whatever influence THE TELEGRAPHER may have will be exerted to secure it.

The Callaud Battery.

IN THE TELEGRAPHER of June 8th we referred to the adoption of the CALLAUD in place of the bichromate of potash and nitric acid batteries by the Western Union Telegraph Company, as a gratifying indication of progress on the part of that company. The value and superiority of this battery for telegraphic purposes are so marked that it is matter of surprise that it should so long have failed to meet with favor from the great telegraph company of the country.

In 1868 Mr. ABEL GUYOT, Inspector of the French Telegraphs, sent to Mr. DAVID BROOKS a model of the plates of the CALLAUD battery, and a copy of the report of the electricians comprising the *Commissions de Perfectionnement*, of which M. Guisot was secretary, recommending the adoption of that battery by the French Government for the public service. This report was translated by Mr. BROOKS, and published in the *Scientific Journal* in 1869. In July, 1870, Mr. BROOKS published an article on batteries in THE TELEGRAPHER, in which he stated that "It is probable the cost of maintaining the batteries used for telegraphic purposes in the United States could be reduced to one tenth of the amount now expended by the adoption of a simple and scientific Voltaic combination, such as the one now in use by the French administration. The battery specially referred to is that known as CALLAUD's, a modified and simple form of the well known Daniell's battery."

Subsequently Mr. PRESCOTT published an article on batteries in the *Journal of the Telegraph*, the official organ of the Western Union Telegraph Company, from which it was evident that he at that time failed to realize the importance to telegraphy of the CALLAUD battery, in which he made the following statement:

"A considerable diversity of opinion exists in regard to the comparative economy of employing the different kinds of batteries for working the main circuits. Without discussing the theories advanced by the advocates of each particular combination, I would suggest that as the consumption of zinc and acids is proportional in every case to the amount of work done, there would not appear to be any substantial reason for the great differences in the cost of maintenance of one kind of battery over another, or of the different varieties of the same species of battery which are claimed; and the actual expenditure for this branch of the service seems, upon examination, to render the question rather one of economical use of the variety employed than of any peculiar merit of the kind selected."

Subsequent investigation and experience has essentially modified the views of Mr. PRESCOTT and other electricians, who failed to appreciate the advantages and economy of the CALLAUD battery. Two years after the publication of the article from which we have quoted, and after the adoption of the CALLAUD battery by every leading railway company for working its telegraph lines, the Western Union Co. has made the discovery that there is, instead of *no* merit in the kind selected. The world moves, and other important and valuable telegraphic improvements will, no doubt, in time, find favor with the Western Union Co. Having adopted the CALLAUD battery, we do not despair, within the next five years, of the managers of that company coming to the conclusion that even the favorite glass insulators of Gen. EOWERT fail to furnish the best possible and most economical insulation.

The Editors of The Telegrapher Kindly Remembered.

WE are under obligations to Mr. D. HENNESSY, of Dannemora, N. Y., for a liberal supply of lake trout, of generous proportions. They came to hand in excellent condition, and the donor was kindly remembered, and his present done full justice, when they were served up.

The Student Question.

WE publish in our correspondence columns the pledge of the telegraph operators of the D. L. and L. M. R. R. Telegraph Company not to instruct every person who may desire to be inducted into the telegraphic fraternity, without regard to qualifications or fitness for the business, but to refer all such to their Superintendent, for examination and approval, before commencing to impart a knowledge of the art.

The criticisms upon the present system of bringing in any and everybody that desires to get a living out of telegraphy, without reference to their ability or fitness therefor, as regards education, etc., are very just. It behooves all operators who have a regard for the credit of their profession to be careful in introducing new member. At the same time there is seldom an over supply of good operators. As Superintendent BROMLEY very justly remarks in his response, the profession is more liable to suffer from the quality than from the number of operators. The rapid extension of telegraph lines and increase of offices necessitates constant additions to the telegraphic force, and the place to learn the business practically and thoroughly is in the telegraph offices. With proper care on the part of Superintendent and operators, in selecting candidates for telegraphic education, the standard of the profession might soon be materially advanced.

Mr. L. G. Tilletson at Home Again.

Mr. and Mrs. TILLOTSON reached home on Sunday last, in the steamer Oceanic, of the White Star line. They both return in excellent health and spirits, after their European tour, which they have enjoyed very much. Our friend TILLOTSON has evidently been much benefited in health by his well earned vacation, and is warmly greeted by his numerous friends, who are highly pleased to see his genial countenance and receive his kindly greeting once more. During his absence he has not been idle, but has examined the telegraph systems of England, France and Italy, and personally investigated the great manufactories of telegraph and railroad apparatus and supplies in the Old World, and made business arrangements and connections which cannot but prove highly advantageous in the future.

More Consolidation.

THE International Telegraph Company, which has its headquarters in Boston, Mass., has been leased by the Western Union Telegraph Company for ninety-nine years, and will become a part of the telegraph system of the latter company on the first of July.

It is understood that the Franklin Telegraph Company proposes to extend its line so as to cover the territory now occupied by the International, which has heretofore been worked in connection with the Franklin Company.

Telegraph Instruments and Apparatus.

ATTENTION is called to the advertisements of F. L. POPE & Co., of electric railway signals and telegraph instruments and apparatus, which appears in this number of THE TELEGRAPHER. This is a good opportunity to secure telegraph apparatus at a reasonable rate. The telegraph signals are entirely new inventions, and furnish the only simple, safe and reliable system which has yet been offered to railroad companies. They have had several months' practical and uniformly successful trial.

Cable Operators on a Vacation.

THE French Cable Company, after a certain term of service, gives its employes on this side of the ocean a two months' leave of absence. They receive their salaries during their vacation, and £25 towards defraying their expenses while away. On Saturday, June 8th, Messrs. R. J. NEEDHAM, GEORGE A. GREEN, FRED. DAVIS, ARTHUR G. COLLIOT, MAURICE COLMAGNE and CHARLES CUTTRISS, of the cable staff at Duxbury, Mass., sailed from this port for England on the steamer Columbia, of the Anchor line, to enjoy their long looked for visits to their friends at home. Mr. NEEDHAM was accompanied by his wife and two children. They were a very happy party.

Mr. R. T. BROWN, Sup't, M. J. GAINES, clerk in charge, and A. E. GREEN, mirror clerk, remain in this country, and will enjoy a holiday during the interruption of the cable.

ELECTRIC RAILROAD SIGNALS.**Economy, Reliability and Safety**

Are secured by the use of our Improved

AUTOMATIC BLOCK SIGNALS,**SEMAPHORE SIGNALS,****SWITCH AND DRAWBRIDGE SIGNALS.**

Our System is pronounced by competent judges to be
SUPERIOR TO ALL OTHERS.

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194 FULTON STREET, NEW YORK.

TELEGRAPH INSTRUMENTS**AND
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The undersigned have on hand, and for sale on favorable terms, the following Telegraph Instruments and Apparatus:

BRADLEY'S BOX RELAYS AND KEYS.

Only a few of these remain unsold, and, as Dr. BRADLEY does not propose to engage hereafter in the manufacture of Telegraph Instruments, when these are disposed of no more can be obtained. Parties desiring to obtain them should make immediate application.

One pair of the celebrated and favorite

POPE & EDISON TYPE PRINTERS,

for Private Lines. These Instruments are in good order, and will be sold cheap if applied for immediately.

The popular

ANDERS & CO.'S MAGNETO-DIAL TELEGRAPH INSTRUMENTS,

for Private Lines. They require no battery, are always ready for use, and can be operated by any person with a few minutes' instruction.

SIGNAL BELL TELEGRAPHS.

A new combination, with Key on same base with the Bell, or otherwise, as may be required. Made under the patent of F. L. POPE.

COMBINATION RELAY AND KEY,

In an elegant Rosewood Base. Will work circuits of any length. The popular

NONPAREIL TELEGRAPH APPARATUS,

for Amateurs, Students and Short Lines. Nearly 1,000 of these Instruments have been sold since their introduction in December last, and the demand continues unabated.

For additional information, prices, &c., address

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CHARLES WILLIAMS, JR.,

(ESTABLISHED 1846.)

109 Court Street, Boston,

has for sale the various kinds of Office and Magnet Wires, including Cotton Covered, Silk, Gutta Serena, Painted, Fancy, and DAYS KERITE COVERED WIRE.

16,000 MILES

OF

"JOHNSON'S" WIRE

USED BY THE

TELEGRAPHS OF THE UNITED STATES

DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
MANCHESTER, ENGLAND.

Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

TELEGRAPH LINES

OF ANY LENGTH FULLY EQUIPPED WITH

WIRE, INSULATORS, BATTERIES,
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Sole Agents for "Johnson's" Wire.

" " " American Compound Wire.

" " " Cauvet's Patent Screw Insulators.

" " " Sam'l O. Bishop's Insulated Wires and Cables.

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Manufacturers of every description of

TELEGRAPH APPARATUS.**AMERICAN FIRE ALARM AND
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THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

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UNIFORM RELIABILITY.

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Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
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Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
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The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System

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FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM

AND

POLICE TELEGRAPHS.

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original FARMER & CHANNING PATENTS, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION of CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

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104 Centre Street,
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TELEGRAPH ENGINEER,
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INSTRUMENTS,

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BUNNELL'S PATENT REPEATER.

These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

JONES' LOCK SWITCH-BOARD,

a most compact and reliable Switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and tough made of the largest size, not subject to the warp and contraction of wood-work.

EXCLUSIVE AGENTS OF

A. G. DAY'S

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COMPOUND RUBBER COVERED WIRE.

SUBTERRANEAN & AERIAL WIRES,

OF THE

HIGHEST INSULATION.

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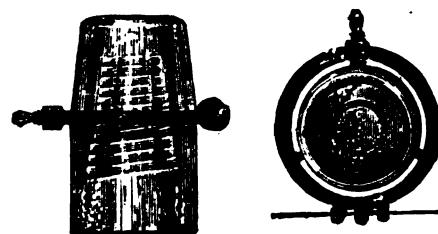
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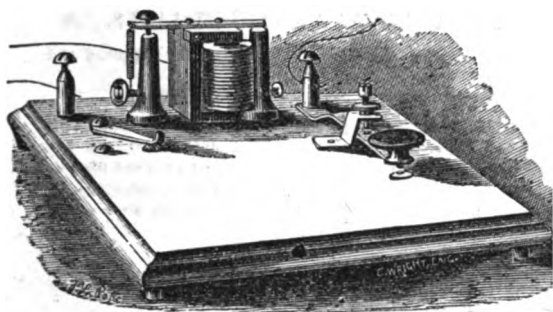
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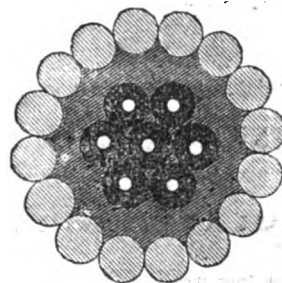
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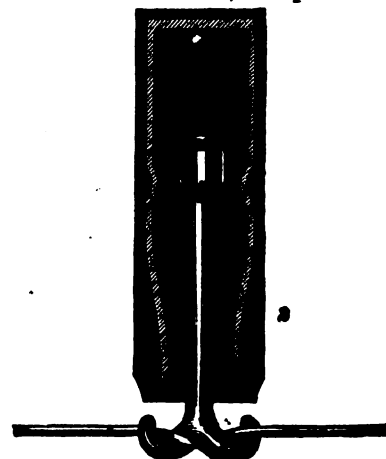
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Whole No. 311

Impudence "in Excelsis."—The Economic Telegram Company, Limited.

AMONG the numerous schemes brought forward for the subscription of a credulous and excited public, during the intensity of the South Sea mania, was one the promoters of which declared it to be a profound secret, and as such they were unable to give any description of it until the whole of the capital was subscribed; the shares were nevertheless quoted at a premium of 200 per cent. This enterprise has hitherto been considered as the height of impudence on the part of promoters, but it has been reserved for the genius of the promoters of the present day to throw far into the shade the puny efforts of their predecessors. The prospectus has been issued of a company called the "Economic Telegram Company," which, for impudence in its proposals and audacity in assertion, is certainly without parallel in the history of joint stock enterprise. "An eminent German philosopher," who appears, unlike many other philosophers, to be also a very shrewd man of business, and thoroughly conversant with the theory of making a good bargain, has, it seems, accomplished that which every merchant, financier, or other person having occasion to communicate with correspondents in various parts of the world, has long since achieved, viz., the discovery and employment of a secret code for the transmission of messages. For this, as we learn from the official letter of the secretary of the company, the inventor is to receive the modest sum of £75,000, and the English public are invited to subscribe the money wherewith to buy the secret of this "eminent philosopher"—capitalists in "Fatherland," we presume, being unwilling thus to reward their distinguished countryman. The directors, having purchased this marvellous discovery, assert that it will enable them to transmit ten messages in the place of one now sent on the wires, and they modestly propose to use the whole of the telegraph systems of the world, towards which they have not subscribed one shilling, in order to carry out "the eminent philosopher's" (Herr A. Bernstein's) system. A short time since a bill was introduced into Parliament—it must surely have been by the promoters of this same Economic Telegram Company—for the construction of a branch railway of something under three miles in length, with running powers over the whole of the London and North Western, Great Western, and, if we remember rightly, over all the leading railways of the United Kingdom. We fancy the bill did contain some clauses about the payment of the usual rates and tolls, and the impudence of the proposal was thus, to some extent, counterbalanced by the acknowledgment of an obligation. In the present case, however, the Economic Telegram Company coolly propose to make use of all the telegraphic wires without—but we prefer to rely on the statement of the directors, and quote from the prospectus itself:

"The company proposes to send its messages through the existing wires, and thus avoid all outlay, cost of maintenance, and risk in the laying down of cables."

Having thus avoided all those troublesome matters of outlay and risk, which the present shareholders of these undertakings have had to bear, the company propose so to utilize the property which does not belong to them as that they will be enabled to send ten messages for the price now paid for one to the real owners, and they promise the investing public, for thus using the property of others, "a permanent dividend, wholly unprecedented in commercial enterprise." It reminds one of the story of the rival hawkers of brooms: one stole the handle, and was thus enabled to sell them at a very low price; the other stole handle, stock and bristles, and was thus enabled to undersell the other in the way of business. With the view of inducing the public to assist in this application of the limited liability principle to this system of petty larceny from public companies, the astounding statement is put forward, which the Chancellor of the Exchequer will be equally surprised and delighted to hear, that the net profit to the exchequer from the transmission of messages in the United Kingdom last year was £798,580! The company propose by their system to send ten telegrams in the place of one, and the public are therefore asked to believe that the company would be permitted to appropriate nine tenths, or £718,720 of this net revenue

of the country for themselves! What will the Chancellor of the Exchequer say to this modest proposal? Can the promoters of the company really be ignorant of the fact that in the Act which authorizes the purchase of the telegraphs by the State a complete monopoly is given to the Government as a protection to the taxpayers, who have paid some eight or ten millions for the purchase of the existing telegraphs? We may fairly leave Mr. Soudapour and the Post-office officials to see that they are not left with only a tithe of the present net receipts from the telegraph system by the operations of this or any similar company. The directors may well promise "permanent dividends, wholly unprecedented in commercial enterprise," if the Government of this and of other countries owning the telegraphs stand idly by and allow the company to do business on their wires at one tenth of the existing tariffs, leaving to their owners to defray "the cost of maintenance" and the dividends on the capital already invested.

The shareholders of the Atlantic and Indian cables may also, perhaps, have a word to say upon this subject of this free user of the lines, "the risk of laying" and the maintenance of which they have had to bear. The secretary of the company, in his letter to the *Times* of Monday, says very openly that "the existing submarine lines will not be permitted to study the amount of their dividends regardless of the public service and interests"—the said public service and interests being represented by the Economic Telegram Company. The Communists of Belleville could not have stated a proposition for robbery in plainer terms, and the managers of existing companies should feel greatly indebted to the numerous foreign gentlemen who, as "honorary directors," "board of directors," and "foreign council of administration," thus enunciate their views as to the rights of British property. It is gratifying to find, however, that while denying to the owners of existing cables the right "to study the amount of their dividends," the foreign gentlemen, who hail from Madrid, Lisbon, Rome, and other places of equally untarnished commercial credit, are mindful of the interests of their own constituents, and promise to them "dividends wholly unprecedented in commercial enterprise."

The "packed parcels" question has been for years past a sore one for the railway companies, but, with respect to them at least, it has this countervailing feature, that the carriers who adopt the packing system do at least bring to the companies a large amount of other business upon which full rates are paid. The Economic Telegram Company propose nothing of the sort: it starts avowedly for the purpose of using the existing wires, avoiding all outlay, cost of maintenance, and risk in laying of cables, and carrying their messages at one tenth the price charged by the present owners, and out of this appropriation of the property of others to secure dividends wholly unprecedented in their character; and there is no reason why, if they have no expenses to pay, the promise should not be fulfilled. We should be greatly surprised, however, if the Chancellor of the Exchequer, having the control of the telegraphs of the United Kingdom, and the directors of the cable companies, are not enabled to devise some plan by which the concoctors of this noted scheme, who propose to invest £75,000 in this wonderful code, may not be baffled in their attempts to rob the taxpayer and appropriate to themselves the dividends of the existing shareholders in the submarine cables.

In a letter addressed to the *Times*, in reply to certain objections put forth by the parties who are to be the victims of this contemplated direct attack upon their property, the writer appears to be so blind to the scope and object of the company's operations that he has the audacity to ask for "a fair field," to enable him thus to abstract nine tenths of the profits of existing telegraphs, and, without any risk or cost of maintenance, apply them, as "unprecedented dividends," to the shareholders of the Economic Telegram Company!—*The Railway News*.

It is understood that the Western Union Telegraph Company are about to put up a new through wire from Chicago, Ill., to Detroit, Mich., on which the Stearns Duplex Instruments will be worked, the business of the company between these points being very heavy at the present time.

New Theory of Atmospheric Electricity.

A CORRESPONDENT, Mr. G. Wright, of Rock Falls, writes to the *Scientific American* as follows:

"The earth is surrounded by an electrical atmosphere which is subject to the law of gravitation, and is consequently more dense near the surface of the earth and more rare in the higher regions. All the phenomena of electricity are due to the disturbance of this electrical atmosphere, in connection with the resistance of different substances to the passage of the electric fluid. When any substance has more electricity than another substance near it, it is in a positive or charged condition; when it has less, it is in a negative condition, and the attraction which negative substances exhibit for the positive is only the tendency to restore the equilibrium."

If a bladder be filled with air near the surface of the earth, and then elevated to a considerable distance, the confined air will burst the bladder and escape, because the atmosphere which surrounds it in these higher regions is of less density. So, if a metallic ball, having the electrical condition natural to the surface of the earth, be suddenly elevated, its natural electricity becomes a charge, which may be drawn off by a spark. This fact can be demonstrated on a still day, when the air is free from moisture. Now, what better evidence do we want to prove that the earth is surrounded by an electrical atmosphere, more dense near the surface of the earth, and that the charge on the ball which was elevated is due to the lesser density of the electrical atmosphere which there surrounds it? When we add to this the chain of evidence which results from the explanation of electricity in the clouds, the causes of *aurora polaris*, the daily variation of the magnetic needle, and every other electrical phenomena, on this hypothesis, the proof is as positive that the earth is surrounded with an electrical atmosphere as that it is surrounded with an aerial one. I have spent several years in experiments and observations to demonstrate the truth of this hypothesis, and upon it to establish a theory that shall be applicable to all electrical experiments and phenomena, and am astonished at the facility with which all questions pertaining to this subject can be solved."

British Army Telegraph.

For this service there is at present one troop of the Royal Engineer train, which is divided into three sections, each carrying twelve miles of wire, in half mile lengths. These pieces can be conveniently joined by an ebonite jointer, which makes a practically watertight joint in less than half a minute, and which, in the case of searching for faults, can be undone in even a less time. The cable consists of a strand of seven No. 22 B. W. G. copper wires, insulated by Hooper's compound and made three inches thick; it weighs 300 pounds per mile. For service it is carried on wooden drums, which again are placed on the "wire wagons," and are to be drawn by six horses. The wagons consist of an under carriage and wheels of an ordinary service wagon, the whole made as light as possible, of "Clarkson's material." Upon this carriage are ranged six drums in two rows, so placed on framework that the wire may be payed out as required from the rear drum as the wagon advances. Thus, on each wire wagon is carried three miles of wire and two dozen iron poles, intended to lift the wire overhead when passing cross roads; for, although the insulation is so strong and good that it has stood and will successfully stand a great deal of ill treatment—such as carts and carriages passing over it when laid unprotected on a hard macadamised road—yet it is not to be expected that anything less durable than a rod of iron could stand the traffic of an army. The poles are formed of wrought iron tubing in two lengths, the butt ten feet long and one and a quarter inches in diameter, the top nine feet long and one inch in diameter, fitting inside the butt and fastened, when in use, by a bayonet catch. These poles can be stayed, if necessary, by three guys, provided for the purpose. The wire is held in a wooden plug which fits into the pole.

There is also carried by each wire wagon a hand barrow, which is fitted with legs, and, as occasion demands, with wheels, so that it is capable of taking a drum of cable when the wire wagon may either not be able or not required to go. There are, moreover, two wrought

iron earth plates, eighteen inches long, four and a half inches wide, and some one half inch thick, which are strong enough to be driven home in any possible soil, and a six gallon cask of water, to insure some moist earth. This, with a jointed ladder of two nine feet lengths, and some spikes, to lift the wire on to a wall if wanted, comprises the main part of the furniture. There is a very neat arrangement on the hind wheel, by means of which the wire when laid out can be rolled up by the action of that wheel. Finally, there is a little hooked stick for lifting the wire as delivered on to the hedges or fences which ordinarily bound the road. The office wagon, not unlike a travelling photographer's van, contains a pair of Morse recording instruments, fitted with Siemens' polarized relay and with Digny's felt ink roller, which has been deliberately preferred to the possibly more scientific arrangement of Messrs. Siemens, as being more portable. The pattern of battery at present in use is a form of Daniell's, arranged for portability by Sergeant Mathison, R. E., of the Electrical School at Chatham. This school is intended to facilitate the training of men from the ranks to the duties of telegraphers.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Automatic Telegraphy.

TO THE EDITOR OF THE TELEGRAPHER.

I TRUST I shall not be thought captious if I offer you a few words of comment upon the following editorial remarks upon my letter in THE TELEGRAPHER of June 15th:

"We have never doubted the practicability of transmitting signals over the wires, within certain limits of distance, at any desired rate of speed. The principal difficulties and obstacles encountered in automatic telegraphy are not in the transmission of the signals—they are in the preparation of the slips, and in the translation and preparation of the despatches for delivery when they have reached their destination. These difficulties have been to some extent overcome by the Automatic Company, but the practical limit of speed must always be, not what can be transmitted over the wires in an hour, but what can be prepared for transmission and delivery."

I am at a loss to imagine how you could have supposed that I intended to claim any particular novelty in our method of "transmitting signals over the wires." You say truly that the "difficulties and obstacles encountered in automatic telegraphy are not in the transmission of signals;" and I am quite sure that I never said anything at variance from this; but when you add that the real difficulties and obstacles "are in the preparation of the slips, and in the translation and preparation of the despatches for delivery, when they have reached their destination," I must be permitted to tell you that *your head is not level* on the main question.

Scores of electricians, before Mr. Little, succeeded in "transmitting signals" over long wires, at almost any desired rate of speed; but there is no evidence, in or out of the writings of the scientists, that any electrician or telegrapher, before Mr. Little, ever succeeded in accurately and practically recording, at one end of a long wire, extremely rapid signals sent from the opposite end—and just here, let me inform you, is the great and the only difficulty connected with automatic or fast telegraphy.

We claim for Mr. Little no invention of batteries, wires, or of the art of "transmitting signals" over them; but to him is due the whole credit of teaching us the truly wonderful and beautiful art of transferring the rapid signals, by clear and uniform black marks, upon paper. Other electricians had accomplished 60 or 70 words per minute over wires two or three hundred miles in length; but any attempt to transmit signals at a greater speed invariably ended in utter confusion, or the *mixing* of the signals at the recording end of the wire. But Mr. Little transmits and records, accurately and reliably, even 1,500 words per minute!

Let me add, further, that there is no more force of truth in your assertion that the difficulties and obstacles in the way of the successful use of automatic telegraphy are to be found in "the preparation of the slips" (by which I suppose you mean perforating or composing the matter to be sent over the wires) than there would be in saying that the difficulties and obstacles in the way of rapid telegraphing by the Morse system are to be found in the tedious process of composing the matter by the limited power of an ink pen. Before messages can be sent over the wires by any process they must be written down upon paper; and, when so written for the use of the Morse method of transmission, the average public compose their messages at the rate of 10 or 12 words per minute. When the public prepare or compose their messages for the automatic method of transmission they will do it by very simple and inexpensive machinery, which can be worked at sight by a child, at the rate of 20 to 100 words per minute—and the working of the machine will be found less fatiguing and less difficult than writing with a pen.

It is true, as you logically imply, that the translation

and preparation of the despatches for delivery involves difficulties; but it is a simple difficulty of reading and copying, and applies with little if any greater force to automatic telegraphy than it does to the copying of ordinary manuscript. Our messages are copied with a pen, at the rate of about 12 words per minute, and by our finger-keyed printer or type-writer at the rate of 50 to 80 words per minute. If you were receiving a thousand words of news per minute, and were in a hurry to go to press, you naturally would set several compositors to work—but I doubt if you would reckon this among the "difficulties and obstacles" in the way of making a readable newspaper. If we had the automatic system in operation over our Washington wire, and were receiving 1,500 words per minute (two thirds of a column of the *Herald*), we would require, perhaps, 30 girls to preside at 30 of our type-writing machines, in order to keep the matter copied up as fast as received. If your old foggy friends of the Morse system were required to transmit and copy up 1,500 words per minute, they would require (on Mr. Orton's basis of the speed of Morse operators) 150 wires and 300 high salaried operators! But conceding, as you insist, that Mr. Orton understated the speed of the Morse operators one half, and that they can telegraph 1,000 or 1,200 words per hour, then the Morse people would only require 75 wires and 150 high salaried operators to do the business that can be better done by automatic telegraphy with one wire and the aid of 31 low salaried lady operators—to which should be added 30 lady operators upon the perforating or composing machines—until such time, not distant, as the public shall have been taught to perforate or compose their messages in the form required for the new system of fast telegraphing.

I cannot close this communication without protesting against the assumptions of the closing sentence of the above extract from your editorial columns. From what is now well known, and has been witnessed by hundreds of practical telegraphers in this city, Philadelphia and Washington, in connection with automatic telegraphy, it seems to me extraordinary that you should hazard the editorial statement that the "practical limit of speed in telegraphing is not what can be transmitted over the wires in one hour, but what can be prepared for transmission and delivery." Practically and obviously, with perforating or "preparing" machines, which can be worked by young ladies at the rate of 50 words per minute, and with type-writing or copying machines, which can be worked by young ladies (with less fatigue than they could play the piano) at the rate of 50 words per minute, there is *no limit* to the speed at which messages may be "prepared for transmission and delivery." This, it seems to me, is too obvious to require anything more in the way of argument than the simple statement of fact.

D. H. CRAIG.

Characteristics of the Telegraphic "Buzzer."

TO THE EDITOR OF THE TELEGRAPHER.

THE Government is about to invest its surplus funds in the telegraph business. *Appropos* of this, I think it is a good time to place the chaplet of notoriety upon the brow of the "buzzer."

No matter how much historians may differ upon particular points, they all agree in saying that the prevailing characteristics of all "buzzers," in all places, and under all circumstances, are the same. It is the object of this essay, therefore, to point out the leading traits in the character of the average "buzzer."

The "buzzer" is an individual that holds sweet converse with a distant divinity through the medium of the telegraph. The ostensible object of his buzzing is to create in the mind of his victim an idea of his own importance. In divers sly ways he seeks to convey the impression that he is the very impersonation of manly beauty, and that in him wit has found its most fitting mouthpiece.

It is particularly amusing to observe the manoeuvres of the "buzzer" when he gets started. Observe the self complacent smile that lingers on his luscious lips as he details to the listening victim what he had for dinner—the gleam of intelligence that lights up his lugubrious countenance as he imagines he sees the point in a rather pointless joke. He dilates at an alarming length upon some trivial occurrence, and contrives to throw in some suggestion of an amusing tendency, and then settles back in his chair and indulges in a loud guffaw. You would imagine he had found a mare's nest and was laughing at the eggs.

Buzzing has attained its highest state of perfection on New York City lines, but it also prevails to an alarming extent in other cities.

The Reform Legislature endeavored to put a stop to this practice, but without avail. The only alternative, then, that remains to its victims, is to refuse to speak to the "buzzer." When he starts out with one of his long winded perorations, let them cry out, with the immortal Shakespeare, "Cheese it, young fellow—give's a rest!" If that don't squelch him I give it up.

J. U.

Telegraphic Base Ball Triumphs.

NEW ORLEANS, LA., June 20.

TO THE EDITOR OF THE TELEGRAPHER.

ON the 16th inst. nine young ball tossers from the *Picayune* office recklessly issued a challenge to the heretofore invincible Morse nine, and, according to programme, the game was played at the Park yesterday morning, when the telegraphers added another to

their list of unbroken victories by the totals of forty-seven to twenty-seven:

MORSE.	O.	R.	PICAYUNE.	O.	R.
Landy, 2d b.....	2	6	McEnerny, c.....	2	5
Whitford, c. f.....	2	5	Tate, 3d b.....	2	5
Fisher, l. f.....	3	6	Ward, 2d b.....	2	2
Graham, s. s.....	3	7	Flynn, p.....	7	0
Beecher, r. f.....	4	4	Capdeville, 1st b.....	3	3
Murphy, 1st b.....	4	4	Hogan, r. f.....	2	5
Rankin, c.....	3	4	Powers, c. f.....	3	2
Wright, 3d b.....	3	6	Donnelly, 3d b.....	1	4
Blaney, p.....	3	5	Connolly, l. f.....	5	1
Total.....	27	47		27	27

Each inning..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | T

Picayune.....	2	0	2	0	1	0	6	5	6	27
Morse.....	4	5	0	4	0	22	2	8	2	47

Umpire—Wm. F. Tracy, Esq., Captain Lone Stars.

Time of game—Two hours and thirty minutes.

Double plays—Morse two, Picayune one.

The telegraphers play the "Nonpareil Nine," of the New Orleans *Price Current*, Sunday next, June 23d, at the festival of the Lone Star Club, at the Base Ball Park, at 9 A. M. On the 30th inst. they contemplate a visit to Biloxi, Miss., to engage the R. E. Lee Club of that place.

ONE OF THE MORSE.

Telegraphic Base Ball Contests in Pennsylvania.

OIL CITY, PA., June 22.

TO THE EDITOR OF THE TELEGRAPHER.

A GAME of base ball was played at Meadville, Pa., June 15th, between nines composed entirely of telegraphers, styled the Oil City "Dots" and Meadville "Dashers." This was the return game between the clubs, the first having been decided in Oil City in September last, which resulted in a score of 39 to 28 in favor of the "Dots."

Quite a number of spectators were present to witness the game, and the day being very pleasant, and the boys in excellent spirits, a good game and time were had generally. After the game the boys were escorted to the National by Capt. Sam Derrickson, where they were supplied with all the luxuries of the season, and placed completely at the mercy of the "Dashers." The "Dots" are resolved to do them likewise at some future time. May their circuit of happiness never be broken, and may the key to their good graces never prove sticky, is the hearty wish of the "Dots."

Kneezelle winning the toss, the game commenced at two P. M. with the "Dashers" at the bat, and resulted in favor of the "Dots" by the following score:

DASHERS.	O.	R.	DOTS.	O.	R.
Melton, p.....	3	8	McClintock, c.....	1	5
Gurley, c.....	2	3	Kneezelle, p.....	2	4
Hunter, 1st b.....	3	1	Nelids, 1st b.....	3	2
McClintock, 2d b.....	2	2	Peck, 3d b.....	2	2
Phillips, 3d b.....	3	1	Wright, 3d b.....	6	0
Boynston, s. s.....	4	1	Lockhart, s. s.....	3	3
Chase, r. f.....	3	2	Keene, r. f.....	1	3
Derrickson, l. f.....	4	1	Jennett, l. f.....	4	1
Matson, c. f.....	3	2	Smith, c. f.....	4	1
Total.....	27	16		27	21

Innings..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | T

Dashers.....	9	0	2	1	1	2	1	0	0	16
Dots.....	1	2	0	1	4	4	2	1	6	21

Flys caught.—Dashers—Chase, 2; Melton, 1; Matson, 1. Dots—Kneezelle, 3; Smith, 1; Peck, 1; Wright, 1; Lockhart, 1.

Time of game—Two hours.

Umpire—W. H. Rose, of Mutuals.

Q.

Answers to Correspondents.

J. J. G., *Pennsylvania*.—The principle upon which the Stearns duplex instrument works is explained in the appendix of Pope's *Modern Practice of the Electric Telegraph*. We shall publish a description of it in a future number of THE TELEGRAPHER. It is not possible for two terminal stations to work with each other at the same time that two intermediate stations are also working, by using different adjustments. If one of the intermediate stations had his key open, it would, of course, cut off all communication between the terminal stations. On a very poorly insulated line, having, say four stations, A, B, C and D, A and B might work together on a low adjustment, and also C and D, without serious interference, because the escape between B and C would virtually have the same effect as a ground wire, dividing the line into two circuits.

C. W. H., *Ohio*.—The Callaud battery was patented in France, May 19, 1868; in England, June 12, 1861, and in the United States Oct. 26, 1869. The Hill battery was patented August 18, 1863. The principle of action is precisely the same in each, the only difference being in the form of the zinc and copper plates. There is no material difference between them in respect of cost of maintenance or general convenience.

N. T. UNIONIST.—We cannot give you the desired information in regard to the funds of the National Telegraphic Union. Mr. A. L. Whipple, of Albany, N. Y., who was the Treasurer, could, no doubt, satisfy you as to the proper disposition of the amount on hand when the N. T. U. ceased to exist.

ON the 12th instant the main office of the Western Union Telegraph Company at Chicago, Ill., was removed from the quarters on the corner of Canal and Washington streets, which have been temporarily occupied since their building was destroyed in the great fire in October last, to the rooms which have been fitted up for their use in Central Block, on the southwest corner of Washington and Market streets. These rooms have been elegantly fitted up, and the business of the company can be much more conveniently and satisfactorily transacted in the new quarters. We shall soon publish a full description of the new office in THE TELEGRAPHER.

Personals.

Mr. GEORGE W. BITTENBENDER, formerly of the U. P. R. R. at Bryan, Wyoming Territory, has accepted a position as night operator in the train despatcher's office of the Central Pacific R. R. at Carlin, Nevada.

Messrs. W. J. LANDY, J. E. WRIGHT and STANBURY have resigned their positions in the New Orleans, La., W. U. office, and go to New York.

Miss FLORA COATES has resigned her position on the Pacific and Atlantic lines at Winona, Minn.

Mr. SWEESIE, formerly of Rockford, Ill., has been appointed manager of the P. and A. office at Winona, Minn., vice Miss Coates, resigned.

Mr. JAMES CONLAN, formerly night clerk at the Canal and Washington streets, Chicago, Ill., W. U. office, has been appointed night operator at the W. U. Tremont House office, same city.

Mr. CHARLES DE FOREST, an old and well known telegrapher, has accepted a situation on the Chicago, Ill., W. U. office night force.

Mr. D. S. FOOTE has been transferred from the W. U. Wabash avenue office to the main office of the same Company, at Chicago, Ill.

Mr. VALENTINE having returned from his extended tour in the South, fills the vacancy in the Wabash avenue W. U. office occasioned by the transfer of Mr. FOOTE.

Mr. FRANK B. MERRILL, who formerly worked the San Francisco, Cal., W. U. wire in the Chicago, Ill., office, has been appointed Superintendent of the Northern Pacific R. R. line, with headquarters at St. Paul, Minn.

Mr. LESTER, of Galesburg, Ill., has accepted a position on the night force at the Chicago, Ill., W. U. office.

Mr. FRANK W. JONES, of St. Johns, N. B., has accepted a situation on the W. U. night force, at Chicago, Ill.

Mr. FRANK M. JONES, of the W. U. day force at Chicago, Ill., left without any previous notice June 1st, and has not since been heard of.

Messrs. ROBERT MANNERS, L. COLVIN, H. M. GORWEY (formerly of the W. U. Pittsburg, Pa., office) and Miss LILLIE SMETHELLS have accepted positions on the day force of the Western Union Chicago, Ill., office.

Mr. A. L. BAKER has resigned his position as private clerk to Manager SWAIN, of the W. U. Chicago, Ill., office, and gone to San Francisco, Cal.

Mr. E. F. ANGELL has been promoted to the position of private clerk to Manager SWAIN, of the W. U. Chicago, Ill., office, vice Mr. A. L. BAKER, resigned.

Mr. D. McD. HALL, having been appointed Agent of the Northwestern Press at Chicago, Ill., has resigned his position on the day force of the Western Union office in that city.

Mr. LEVALLY, of the A. and P. Chicago, Ill., office, has resigned, and accepted a position on the day force of the W. U. office in that city.

Mr. WM. M. SPINK, an old and well known telegrapher, has accepted the position of night report operator in the P. and A. Company's office, vacated by the promotion of Mr. A. B. HILLIKER.

Mr. H. W. PLUM, manager of the W. U. Wabash avenue office, Chicago, Ill., has been appointed third assistant day manager of the main office of the same company. This is an excellent and merited appointment, as Mr. PLUM is an old employé of the company, and saw considerable service as an army telegrapher. The appointment gives general satisfaction.

Mr. ANDREWS, manager of the P. and A. Company's Market street office, Chicago, Ill., has resigned, to accept a situation on the W. U. day force in the same city.

Mr. JOHN P. TOWLER, formerly chief clerk of the P. and A. Chicago, Ill., office, and Mr. ROBERT MINOR, cashier of the same office, have resigned, and accepted situations on the clerical staff of the W. U. Company in that city.

Messrs. FRANK B. GILES, manager, and EARL J. RUDD, chief operator P. and A. Chicago, Ill., office, have both resigned and gone North.

Mr. STEVELY, formerly manager of the Titusville, Pa., Pacific and Atlantic office, has been appointed manager of the Chicago, Ill., office of the same company, vice GILES, resigned.

Mr. A. B. HILLIKER, formerly night manager of the P. and A. Chicago, Ill., office, has been promoted to chief operator of the same office, vice RUDD, resigned.

A Keokuk, Iowa, vineyard has 160 miles of wire.

The summer solstice is upon us, and the telegraphic fraternity are again interested in the question of vacations or no vacations.

It is reported that the Atlantic telegraph cables of the Anglo-American Company show a marked decrease of insulation, but not to such an extent as to interfere with their use for the transmission of signals.

The Telegraph.

By Cable.

THE AUSTRALIAN TELEGRAPHS.

LONDON, June 22.—The Australian telegraph authorities have arranged to convey telegrams over the section of country where the land lines are yet unfinished. By this means business, although sustaining a slight delay, may be expected to pass regularly, and with considerable reliability, to Australia, South Australia, Victoria, Queensland, New South Wales and Tasmania. The section of line incomplete is now only a hundred miles.

A Melbourne journal says that messages are passing along the Trans-Australian line of telegraph for some one thousand two hundred miles north of Adelaide, and that there can be no doubt that English news will speedily come to hand by that route.

THE AUSTRALIA AND JAVA CABLE BROKEN.

LONDON, June 25.—The Australian cable authorities have had the misfortune of a break in their main cable between Java and Australia, just at the moment when the land communications had been established. Business must, therefore, for the present be mailed at Point de Galle, Ceylon, as heretofore.

Foreign Telegraphic Notes.

THE Czar of Russia and the Sultan of Turkey have come to the conclusion of establishing telegraphic communication between Odessa and Constantinople by means of a cable underneath the waters of the Black Sea. The St. Petersburg journals of the 2d inst. published the terms of the convention between their Imperial Highnesses. By these terms the starting point of the cable will be on the European shore of the Black Sea, at the mouth of the Bosphorus. The cable will be finished within a year.

The London and China Telegraph says: "Manilla and Bangkok have not yet been provided with telegraphic communication. The land line scheme proposed appears to have been abandoned, and we can only look to the submarine companies to carry out the work. It would, no doubt, vastly facilitate the accomplishment of this object if the three companies—Indian Extension, China, and Australian—would amalgamate. As it is, we believe that not one of them can undertake the matter, and it certainly will not pay any rival company to lay down these lines. The dividends and prices of shares in the existing companies must very materially increase before such a project would find favor. There has been a talk of a Spanish subsidy for Manilla, but in the present condition of Spain it is idle to expect any such aid."

The total number of messages forwarded from postal telegraph stations in Great Britain, during the week ending June 1st, 1872, was 288,400—an increase upon the corresponding week last year of 86,351.

It is reported at Stockholm that the King of Sweden has given his consent to the removal of the International Telegraph Convention, with the regulations and changes as agreed to by the Congress held at Rome last winter.

The receipts for the month of May of the Great Northern Telegraph Company were:

On the European lines, 114,366fr. (£4,575), and on the China-Japan lines, 94,485fr. (£3,779); total, 208,851fr. (£8,354). For May, 1871, the receipts on the European lines were, 103,749fr. (£4,150), and for the China (Hong-Kong-Shanghai) section, 32,110fr. (£1,284); total, 135,859fr. (£5,434), showing an increase of £2,920.

Telegraphic Brevities.

THE wires of the Franklin Telegraph Company have been extended to Newport, R. I., and the office was opened for business in that city on Friday, June 21.

It is rumored that the Western Union Telegraph Company are about to build four additional wires east from Chicago, Ill.; two via Buffalo, N. Y., and two via Pittsburg, Pa.; also a new No. 8 wire over the Rock Island route.

Additional signal service stations are to be established at Providence and Newport, R. I.

Suicide of a Telegraph Operator.

BENJAMIN F. MINER, a telegraph operator, formerly in the employ of the C. P. R. R., and more recently of the U. P. R. R., committed suicide at the Truckee Hotel, at Truckee, California, on the 15th inst., by shooting himself through the head. The act was committed with an ordinary sized Derringer. The ball entered about an inch over the right ear, penetrating the brain, and causing almost instant death. He was a mere boy, being only about nineteen years of age. This seems to be his second attempt to commit the deed—the pistol failing to go off in the former attempt, and some one having taken it from him—but this time he succeeded only too well. He had but recently returned from the U. P. R. R., where he had been employed in the Superintendent's office. He had advertised to lecture at the Good Templar's Hall, in this place, on the resources of Nebraska, Wyoming, Utah, etc., but fail-

ing to put in an appearance at the appointed hour, he was found, after searching, to be in his room, upon the floor, dead, in a pool of blood. He has a mother living in Sacramento. He left a short letter in his room dated the 15th, stating where to find his keys, etc., and to make whatever disposition of his effects they should think proper, and also stating that "he was lost."

An Electric Railroad.

To New Orleans must be awarded the credit of the most striking proposition in railway propulsion, as to New York we give precedence in novel schemes for railways. In the latter city we have a railway on pillars, several underground projects, a Vanderbilt scheme, and a pneumatic railway, and a scheme for an endless travelling sidewalk. New Orleans has been experimenting with ammonia as a motive power, which late advices state has been abandoned by the inventor for compressed air; and now follows an account of an electric railway. As a hundred miles an hour is the predicted speed expected from this remarkable invention, it may be a little interesting to look at what that speed involves. First, it involves 533½ revolutions per minute for the driving wheels, supposing them to be 16½ feet in circumference, or over eight revolutions per second. Then it involves resistance by the air of fifty pounds to each square foot of cross section, and as, at one hundred miles per hour, three and three fourths pounds draught is a horse power, it would require three and one third horse power for each square foot of cross section to overcome the resistance of the air alone—amounting, supposing the end of this car propelled by lightning to have an area of sixty-four square feet, to eight hundred and fifty-three and one third horse power.

One hundred miles per hour is one hundred and forty-six and two thirds feet per second—a velocity equal to that acquired in falling three hundred and thirty-six and one ninth feet.

A hundred miles an hour by an electric engine "is good." When will newspapers, which should be the instructors of the people, cease to be the vehicles of such arrant nonsense.—*American Artisan*.

New Patents.

For the week ending June 4, 1872, and bearing that date.

127,493.—ELECTRIC CLOCK. Vitalis Himmer, New York, assignor to himself and Gustave Autenrieth, same place.

1. The armature lever D, connected with two weights, o and d, which are alternately let down upon arms projecting from opposite sides of a pendulum, as specified.

2. The crank m on the trunnions i of the armature D, arranged in combination with the crank b, arbor a, and pin y, in such manner that the two cranks are affected in opposite directions by the motion of said armature, as specified.

3. The spring t, cord u, screw v, the screws w and s, arranged in combination with the armature D, substantially as and for the purpose herein shown and described.

4. The combination of the springs f g and screws A with the projecting arms d e of a pendulum, as set forth.

5. The pawl lever I, provided with the weighted arm p, which is raised by the pendulum but drops by its own weight, to actuate the train of wheels and hands, as set forth.

6. The friction roller q, applied to the arm p of the lever I, to be acted upon by the pin r, substantially as herein shown and described.

7. The pawls l, m and n, arranged in combination with the lever I and wheel j, substantially as herein shown and described.

8. The pendulum A, combined with the diminutive pendulum L, pins r s and lever I, substantially as herein shown and described.

9. The disk y, applied to the arbor A, and notched to the edge, substantially as herein shown and described.

10. The spring plates v w arranged on the clock work, in combination with the conductors t u and notched disk y, as set forth.

11. The combination of the electro-magnet M and armature N of the secondary clock, by wires t u, with the plates v w on the main clock, as set forth.

12. The combination of the armature lever N with the lever P, pawls c d A and click g, substantially as herein shown and described.

For the week ending June 11, 1872, and bearing that date.

No. 127,809.—POLE CHANGER FOR ELECTRICAL APPARATUS. John E. Smith, New York.

A pole changer, composed of the toothed wheel C, the springs G G', and adjustable screws or points of electrical contact a, the whole being arranged for operation substantially as described.

Recent British Patents.

No. 1,537.—E. A. Calahan, 8 Southampton Buildings, London. ELECTRIC TELEGRAPH SIGNAL OR ALARM APPARATUS. Dated May 20, 1872.

1. A signaling instrument so constructed that any number may be placed in a single line or circuit, in connection with a signal apparatus at the central station, and each one, when not in use, will offer no resistance to the current, and will not permit of two operators using the line at the same time—each instrument showing whether the line is clear or occupied in the transmission of signals. 2. A contrivance whereby the said instrument is connected with a local circuit, which has a wire extended to any desired part of a building, to be guarded, and which, when broken, will cause the instrument to operate and transmit a continuous series of signals, and prevent the use of the line till those signals have been responded to, and the instrument cut out of the circuit.

Married.

HANFORD—FRED.—At the residence of the bride's aunt, at Buffalo, N. Y., June 4th, by the Rev. E. R. Bishop, Mr. JAMES T. HANFORD, of the Western Union Telegraph office, Cleveland, Ohio, to Miss ADELA C. FRED.

Died.

WILLIAMS.—At Baltimore, Md., of consumption, on the 20th inst., RUDOLPH R. WILLIAMS, lately employed by the Franklin Telegraph Company, Baltimore, Md., aged 23 years 6 months and 14 days.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.

FRANK L. POPE, Associate Editor.

SATURDAY, JUNE 29, 1872.

Real and False Economy in Telegraphy.

THE telegraph has now become so widely extended, and further extensions and increase of offices are so constantly and largely demanded, that the subject of real economy in telegraphic construction and management has become of vital importance. The active competition which exists in this country for telegraphic business constantly tends to a reduction of charges for telegraphic service, and although at present there seems to be little disposition among telegraph managers to engage in the peculiarly unprofitable system of competition popularly known as "cutting rates," still such a warfare, however ill advised it may be, is always possible where competition exists. While THE TELEGRAPHER is not the advocate of "Cheap Telegraphy," or a reduction of rates below a point at which properly managed telegraph lines may pay reasonable compensation to the capital employed, as well as to the employes, the fact cannot be safely disregarded that the public demand such gradual concessions in this respect as must force telegraphic charges below the standard at which they have, with certain exceptions, been heretofore maintained. The principal argument relied upon and used by the advocates of a connection of the telegraph with the Government service, is the material reduction which it is proposed to make in the charges for the use of the telegraph. That their premises are unsound, and their argument fallacious, all experience has shown. It is true that the rates to individuals may be made lower under a Government telegraph monopoly, but the inevitable deficiency must be made up in this as in European countries—by appropriations in some shape from the National treasury.

That actual economies may and should be introduced in telegraphic management, which will cheapen the cost of telegraphic service and warrant further concessions to the patrons of the lines, we regard as unquestionable. The company, or combination of companies, which shall realize this fact, and introduce these economies, must have a very decided advantage over competitors who shall pursue the old style of telegraphic management.

That real economy has never to any extent prevailed in telegraphic management in this country cannot be successfully questioned. Where economy has been attempted heretofore it has generally been of a most costly kind, and of a character which may very aptly be described as "saving at the spigot and losing at the bung hole." One method of economising, popular among a certain class of telegraph managers, is to build cheap lines, with inferior wire, poles and insulators. The cheap line having been put up, inferior instruments, batteries and apparatus is placed in the offices, and, to complete the economical system, incompetent Superintendents, managers and operators are employed to conduct the business, because their services can be had for a few dollars less per month than thoroughly competent persons can be induced to take similar positions for. It is needless to say that, despite high rates of toll, such lines seldom or never pay dividends, and, after dragging along for a few years, are "consolidated" into some other system.

Real economy in telegraphy we consider to lie in altogether another direction. If a telegraph line is worth constructing at all it is worth constructing in the best and most reliable manner. Nothing can eventually be saved by "cheap" construction. The best wire that can be used will, in the end, prove most economical and advantageous. Glass insulators, or inferior insulators of any kind, are or should be a reproach, as they certainly will be a source of pecuniary loss to any telegraph company that uses them. The best instruments, apparatus and batteries, will prove most economical in the long run. The first outlay in

the construction of telegraph lines, if the money is judiciously expended, is not a matter of prime consideration. A well built and well equipped line will be so much more reliable, will last so much longer, the percentage of deterioration will be so much less, and the average amount of business that it is capable of doing will be so much greater, as to render its cost, within reasonable limits, a matter of secondary importance. When such a line is built and equipped, true economy will be found in manning it with the best class of employes that can be obtained. The matter of compensation and duties should be adjusted in such a way as to secure the best attainable talent, and the situations made so pleasant as, once secured, to retain the employes permanently in the service. One really good and efficient operator will accomplish more, and actually earn more money for a line, than two or three inefficient and partially incompetent ones can do. A system of promotion for merit should be established, so that every employe might be assured that proper attention to duty and devotion to the interests of employers would be certain of recognition, and, as opportunity occurred, would secure advancement. Is there a doubt but that a line thus constructed, equipped and manned, would prove a paying investment?

Economy might be studied, also, in prohibiting gossiping over the wires during business hours, and in the stern repression of the "dead head" business by which most telegraph lines are now so greatly obstructed and encumbered. Strict discipline should be enforced, and every employe should be made to realize that, in occupying the wires with inconsequential matters, the company is actually being defrauded of its just dues, so long as a single business or paid message is obstructed or delayed. This is a point upon which many telegraphers have very loose or erroneous ideas, and it is one on which it is most important that correct ones should be instilled. What operator has not known of instances where the "ground wire" has been put on, and communication through a whole line cut off, for a longer or shorter time, that two employes might occupy the wire for personal conversation and purposes? This is not so common an occurrence now as in former times, but it is a practice not quite altogether obsolete. A thorough reform in this occupation of the line for personal chat and gossip, and in regard to other dead head or non paying business, would be a most important item of telegraphic economy.

There are various other minor matters in which economy could profitably be introduced, which might be mentioned, but the above must suffice for the present. With the practical realization of those to which we have briefly alluded, telegraphs would become far better and more profitable investments than they now are, the public would be better served, and the per centage of reduction on present rates of tolls which would be possible, would no doubt surprise many telegraph managers, even of those who consider themselves by no means old foggy in their ideas.

Electrophysiology.

We have received a copy of a treatise on Electrophysiology, written by A. U. EVARTS, M. D., and published in the *Richmond and Louisville Medical Journal*.

Dr. EVARTS was formerly a telegraphic operator, but graduated from the Louisville Medical College in 1871, and has now been for some time a successful practitioner at La Porte City, Iowa.

In this treatise the author traces out and demonstrates the analogy between "the nervous system," its mode of structure, transmitting power, ramifications, its physiological and pathological phenomena, and the electrical telegraphic system.

He says: "The telegraph and nervous systems are precisely alike in mode of structure, and the principle to be obtained in both is the same, viz, the transmitting medium of an imponderable substance. They are analogically identical in their anatomical structure, however minute; one being the transmitting medium of an individual, under control of its possessor alone, the other subservient to the call and beak of a nation; one the pulse beat of a single person, the other the pulse beat of a myriad of such beings."

We have not space to follow out this beautiful comparison, but it fully develops and demonstrates the theory of the author. For every detail and specialty in

electrical telegraphy is found a corresponding arrangement and detail in the nervous system, and both are shown to operate on exactly the same principles, and practically in a similar manner.

This article was originally written by Dr. EVARTS as a thesis at the period of his graduation in the Louisville Medical College, March, 1871, and for it he received the prize awarded to the writer of the best thesis. The editor of the *Medical Journal* in a note states that it is published "on account of its extreme suggestiveness; on account of its originality, and because the prize committee (entirely disconnected with the college) thought that it ought to be presented to the profession at large."

The many telegraphic acquaintances and friends of Dr. EVARTS will be pleased to hear that he is making his mark, and achieving creditable and honorable position in his new profession.

Annual Telegraph Excursion.

We are under obligation for an invitation to participate in the annual reunion of the telegraph operators of Southern and Central New York, which takes place this year at Syracuse, on the Fourth of July next. These reunions are very enjoyable affairs, and we regret that previous engagements will prevent our being present on the occasion.

There will be a dinner provided for those who may attend, an excursion on Onondaga Lake, accompanied by a band of music, a drive around the city, with other entertainments, should time suffice.

These reunions of telegraphers are not only seasons of enjoyment, but also have an excellent effect in creating and maintaining personal acquaintance among the fraternity, and in establishing sentiments of unity and friendship, which cannot but prove beneficial.

The American District Telegraph.

THE introduction by the American District Telegraph Co. of a recent invention will enormously extend the benefits of the telegraph. By its use electricity will henceforth run our household errands, guard our houses against theft, save them when threatened by fire, facilitate the transaction of business, and promote our comfort and convenience in numberless ways. This instrument, manifestly useful as it is, will probably, like all its valuable predecessors, be slower of introduction than its merits seem to promise. People will not at once realize its possible convenience and usefulness; but when they find that it faithfully ministers to their wants, their desires will increase in proportion to the facility with which they are satisfied.

The experience with this apparatus in Brooklyn, where it has been in operation for several weeks, illustrates this. Many subscribers who, when it was first placed in their houses and stores, used it not oftener than once or twice in a fortnight, now employ it every day. They have discovered many ways in which it saves time, exertion and money. Physicians avail themselves of it largely in communicating with their patients, in sending medicines and in procuring nurses. Hotel keepers find that it not only saves an extra errand boy but is also a great convenience to their guests. It aids both tradesmen and customers. In a word, it is convenient, useful, cheap, and will soon become indispensable. A few years later it will become as common in our houses, offices and stores, as clocks and timepieces are to-day.

This system of telegraphy has been perfected by the originators of the Gold and Stock Telegraph, Messrs. E. W. Andrews, H. L. Hotchkiss and E. A. Calahan, whose names and whose success in the field of telegraphy are sufficient guarantees, not only of its soundness and usefulness, but of the efficient manner in which it will be carried out. Mr. Andrews is now in Europe upon business connected with the affairs of the company. The company's District, No. 1, goes into operation this week. Bankers and brokers will have an opportunity to test the usefulness of the invention in their line of business.—*Almy's Daily Financial Record*.

Reduction of Postal Rates.

THE new postal bill, which has become a law, authorizes the use of one cent postal cards for correspondence, similar to those introduced in Great Britain nearly two years ago. The House provided in the bill for cards with a paper flap, to cover and conceal the writing—the Senate changed this to an open card. In conference committee the style of card was left to the discretion of the Postmaster-General, who is understood to prefer the open card. The face of the card will bear a one cent stamp, and will be provided with lines for the address, and the back will be ruled for the letter. The postage on circulars, newspapers, and other transient printed matter, which, under the old law was two cents for every four ounces or less, is now one cent for every two ounces or less. Small circulars, which formerly cost two cents to mail, can now be sent for one cent.

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One pair of the celebrated and favorite

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A new combination, with Key on same base with the Bell, or otherwise, as may be required. Made under the patent of F. L. POPE.

COMBINATION RELAY AND KEY,

In an elegant Rosewood Base. Will work circuits of any length. The popular

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for Amateurs, Students and Short Lines. Nearly 1,000 of these Instruments have been sold since their introduction in December last, and the demand continues unabated.

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DAY'S KERITE COVERED WIRE.**16,000 MILES**

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The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

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Louisville, Ky.,
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Lynn, Mass.,
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Milwaukee, Wis.,New York City,
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First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.**Second**—The Automatic Signal Boxes.**Third**—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.**Fourth**—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.*These Features combined form the*Only **PERFECT, COMPLETE and RELIABLE** System

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It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

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that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.Messrs. **GAMEWELL & CO.** are the owners of the original **FARMER & CHANNING PATENTS**, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by**MORE THAN TWENTY PATENTS.**

The most important improvement which the Proprietors have adopted and introduced is the

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the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

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has met with the universal approbation and commendation of the

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AND THE

PRESSthroughout the **UNITED STATES and CANADA.****NO EFFORT, TROUBLE OR EXPENSE**is spared by the Proprietors to obtain and secure **ANY POSSIBLE IMPROVEMENT** which shall increase the**EFFICIENCY,****RELIABILITY and****ECONOMY**

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the **UNITED STATES and the DOMINION of CANADA,****CANNOT EASILY BE ESTIMATED,**but that, in every community where it has been introduced for any considerable length of time, they have been enormous, **THERE CAN BE NO QUESTION.***The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.*

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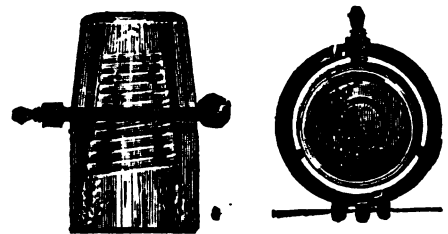
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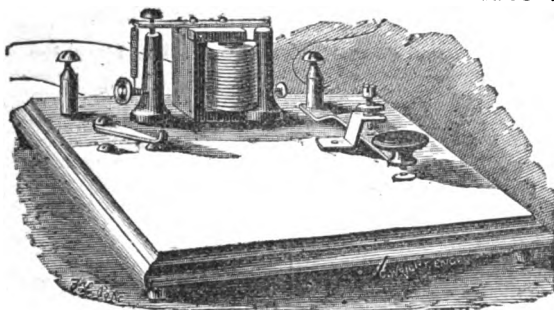
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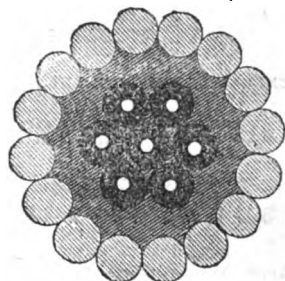
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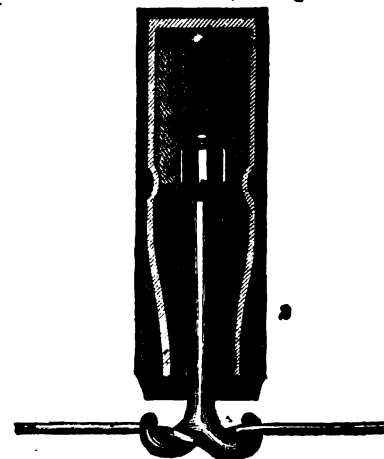
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From the outset the demands made upon this company were very great, and so largely exceeded their facilities that they have been forced to repeatedly enlarge their quarters, in order to make room for the accommodation of the requisite machinery and workmen. During the past year they have occupied a room 60 by 80 feet, and have constantly employed over thirty men in the manufacture of electrical and telegraphic instruments.

Their quarters having become again too straitened, they have removed to the new building erected for the business fronting on Kinzie street, between State and Dearborn streets. As it is but one block north from State street bridge, the location is very near to the centre of business on the south side, while the ground occupied costs but a small proportion of what it would be worth on the high priced south side of the river.

The building—three stories high, with a basement—is 140 by 86 feet, and has Kinzie street on the north and a broad alley on the east and south—thus securing light from both sides and one end. The first floor and basement are divided into seven stores, each 20 feet by 86. The firm occupy one store and two basements, and a room 20 feet by 86 on the second floor, and the whole of the third floor.

The basement is high and well lighted, and contains the engine and boilers, brass and zinc foundry, and storage room. The store on the first floor is used for office and sales room. The room on the second floor contains machinery for making and polishing the wood work and cases for instruments.

The whole of the third floor is devoted to the instrument manufactory, and contains machinery and appliances of the most improved styles, for the production of the various articles by which the firm has made itself so well known in the West.

Great care has been taken to secure all the available safeguards against fire. The roof is of iron; the floor of boiler room and foundry of brick and cement. By using a small engine in the basement a stream of water can be thrown all over the building. Babcock extinguishers are stationed so as to be at hand in any emergency, and a watchman is kept on duty at night. A fire alarm signal box will be connected with the system centring at the City Hall. A steam elevator runs from the basement to the third floor. The different stories are provided with water closets, wash basins, and all the other modern improvements.

Although the shop room is so large, it is just about as light as day in all parts of it; every foot of the room is, therefore, available for fine work. Over seventy-five men can find room to work in this room alone, and in all the departments it is expected one hundred and twenty-five or more will be employed in the establishment as fast as the necessary tools can be made for their use.

To those who are not familiar with the growth of telegraphic enterprises the question naturally arises, What will so many men find to do? and it is a question that conservative business men must have answered for themselves before preparing to go to work on so extended a scale. We have not space for an extended description of all the different instruments, general or special, which Gray & Barton have upon their list of products.

Several of the most valuable recent improvements in the application of electricity to profitable service have

been made by Mr. Gray. His printing instrument for private lines has made a record for itself unsurpassed by that of any other. Nearly fifty of them are in constant daily use on lines in the hands of persons unskilled in telegraphing. The instrument requires but one wire and one main battery.

The Needle Hotel Annunciator has met with great success in the West—Gray & Barton having fitted up more hotels, using a larger aggregate of indications, than have been furnished in this country of all other annunciators combined. The hinges cut out for single wires, although a small thing, is a very useful one, and a great many have been already furnished, and the demand is constantly increasing. It has been the theory of Gray & Barton that the profitable field for invention was in devising apparatus for purposes not already satisfactorily provided for. Accordingly, they have attempted nothing new in the way of registers, relays, keys and sounders, so far as relates to the arrangement of parts. They have been taxed beyond their capacity of production in supplying the Western Union Ottawa styles of these instruments; and their shop is now at work upon a thousand complete sets, a part of which will be ready for delivery within the next sixty days.

The firm have manufactured during the past two years a considerable number of Gamewell & Co.'s fire alarm signal boxes, and are now engaging in the manufacture of induction coils for medical purposes on an extensive scale. Their galvanometer and resistance coils are well adapted for telegraphers' use, especially in offices. Except that it is not so light, it is preferred by those who have used both to the universal of Dr. Siemens, on account of its greater convenience and the accuracy of the results obtained.

Arrangements have recently been completed between Gray & Barton and the Western Union Telegraph Company for the concentration of the business heretofore done at Ottawa by the W. U. Co.'s shop and that of Gray & Barton in Chicago. A company has been organized under the name and style of the "Western Electric Manufacturing Company," with a capital of \$150,000, to carry on the business heretofore done in the two places. It is expected the tools and machinery will be removed from Ottawa to the new quarters in Chicago, but the shops will run as they are until they get a stock of instruments a head sufficient to last while the moving is being done.

Humors of the Telegraph.

A GOOD story was told us the other day of a bashful and retiring youth residing in Boston. It is, perhaps, needless to state that he was *not* an operator who lacked the courage to put the momentous question to the object of his affections at short range, and bethought himself of the happy expedient of going all the way to Pittsfield, Mass., from whence he telegraphed the following message:

"Pittsfield; to Miss ———, Boston.

Will you marry me?
4 paid. Sig. ———."

To which, in due course of events, came the following reply:

"Boston, to ———, Pittsfield.

No, you confounded fool!
4 collect. Sig. ———."

We should have "lofted" to have been there and seen that youth as he paid forty cents for the pleasing information conveyed in the above despatch.

A correspondent in Washington sends us a good story of a little occurrence which happened in that "vicinago" not long since. An old gentleman had adopted the honorable and probably lucrative business of a "curbstone electrician," viz., the administration by means of a magneto-electric apparatus of the invigorating fluid, "which exhilarates but does not intoxicate, and is good for everybody, especially if they are in love."

A certain telegraphic operator of that ilk, with the laudable intention of "playing it low down" on the venerable scientist, armed himself with a section of relay wire, extending from hand to hand, *via* the inside of his coat sleeves; he then walked boldly up to the machine, seizing the handles and telling the "ancient" to turn up lively, for he had got it bad.

The latter turned on a full head of electricity for several minutes without producing any visible contortions in the muscular system of the young scapegrace; at last he let go the crank and casually remarked, as it were: "Oh, well, there are some bums and whiskey suckers that can stand a good deal more than ordinary people." The crowd, who had been snickering at the fruitless grinding of the old gentleman, guffawed right out as he made this unexpected turn on our hero, and the latter immediately withdrew.

We frequently have sent us samples of applications for situations, emanating from parties who are anxious to wrestle with a telegraph key before they have succeeded in conquering the King's English. One of these now before us commences in the following highly original vein:

"Dear Sir—I tak my pen in hand to ask the privilege of coming and finishing the telegraph trade with you." It appears that the operator in the nearest available office "dose not want to take a printis," although in the present case he is certainly not open to censure on that account, and we commend his example for general imitation. This applicant, after detailing his qualifications and references at considerable length, winds up by remarking that he cannot "rite eney more now."

Another aspiring genius writes to a train despatcher as follows:

"Dear Sir. I want an Office on your line i am A Graduate in Teligraby By Sounde and have had rail R r Expirence in Charg off a Office for 6 monthes i can Doe any Thing you want me To do in Teligraby. Pleas ancer soo." While we have no desire to wound the feelings of these ambitious young persons, yet we would suggest that it would be well for those receiving such applications, to point out the fact that some slight acquaintance with the rudiments of orthography, syntax and penmanship is necessary, even for the most hopeless "plug," and that the employment of such persons is an injury both to themselves and to the profession.

"Platina," a correspondent from Relayville, Ill., says that a youth of "snipe catching fame," who officiates as night operator at B * * *, Ill., recently sent in a key to the repair shop, with a request to have a new set of magnets put in, as the old ones were entirely worn out.

The "bull" business is getting a little threadbare, but we think that one which came a few days since from a western friend will do to print. It occurred in a railroad message, and consisted of the word "Quibb." The operator who received it was not satisfied with the sense of the message, and held it for correction. A repetition disclosed the fact that the word was originally designed to be the number of a car, to wit, 1,208. It would be hard to produce a worse case than this of "murdered Morse."

Miscellaneous.

ELECTRIC LIGHT.—Since the invention of Grove's battery, that and Bunsen's modification of it have been almost exclusively used for the electric light. These, as far as high electro-motive force and smallness of resistance is concerned, are preferable to any other; but there are great objections to the use of them in the necessity for discharging them frequently, and in the emission of acid fumes, which cannot but be injurious to the person who discharges the battery, and which are very destructive to apparatus unless the battery be kept in a special chamber. The battery employed in the Glasgow University, and which gives great promise of being really successful, is a modification of Daniell's battery.

ELECTRIC EARTHQUAKES.—A frantic scientist has discovered at last the cause of California's shocking earthquakes—it is all the fault of the mineral belts constituting the slopes of the Sierra Nevada. Iron predominates in all these belts, and as iron is the most obliging conductor of electricity, they become in the dry season immense reservoirs of confined negative electricity. Dry air being a non-conductor, all this force gets no chance for equalization with the air cur-

rent, hence, when it becomes crowded, it bursts out with tremendous impetuosity. To check this agitating performance our *savant* advises the use of iron conductors. The trembling Californians listen kindly, and lonely horsemen, winding down the great hills of the Sierra Nevada range, may presently prepare to see them surrounded by an expensive and bristling fence of lightning rods.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Chicago Rebuilding.—The New Western Union Telegraph Office.—Telegraphic Intelligence.—Military Operators' Bounty Project.—Sensible Suggestions, etc.

CHICAGO, ILL., June 29.

TO THE EDITOR OF THE TELEGRAPHIC.

THIS excessively hot weather naturally drives a man into the shade, when he can get there, and not having anything to do just now but reflect on duties devolving upon me, I made up my mind that a letter was due from me to "our paper"—a debt which I will now proceed to liquidate.

Building in this city is going on very rapidly, notwithstanding the hot weather, and "Chicago in ruins" will soon be no longer a proper designation. It will not be long until it will be known as "new" and "old" Chicago.

The new Board of Trade building is being rapidly pushed forward to completion, and there is now little doubt but that it will be ready for occupancy, or, at least, near enough so to admit of its being dedicated on October 9th, the anniversary of the great fire. The large building on the southwest corner of Washington and La Salle streets, and directly opposite the new Board of Trade building, in which the main offices of the Western Union Telegraph Company will be permanently located when completed, is making rapid progress, and will be ready for occupancy about the same time.

The Central Block, a large five story brick building, on the corner of Market and Washington streets, is now completed, or so nearly so that the Western Union Telegraph Co. have moved their main offices into it. The receiving office in the new building is on the first floor, on a level with the street, and just north of the centre of the building. It is being fitted with every facility for the convenience of customers. Around the sides of the room are arranged desks for the accommodation of persons who may desire to write their messages, and the counters and desks for receiving dispatches are very conveniently arranged. The general appearance of the room is neat and elegant, and nothing has been omitted which would be likely to add to the convenience of the public and the employees. Judging from the liberal amount of patronage and commendation bestowed by the public, it must be very satisfactory to the patrons of the company.

From the rear of the office there is a direct entrance for the accommodation of the delivery department into the Board of Trade rooms. That "hole in the wall" saves the hard working, energetic little messengers many a step. A pneumatic tube runs from the north side of the office up into the operating room in the fifth story.

To facilitate ascent into the upper regions an elevator is provided. Suppose that, having sufficiently examined the more public part of the premises, we take passage on this elevator and mount to the fifth story, for a visit to the operating department of the establishment. On reaching the fifth story the polite conductor directs us, "Turn to your left and go north a few steps for the operating rooms of the Western Union Telegraph Co." The information is, however, hardly needed for us, as our ears at once catch the familiar "clatter," "clatter" of the "fastest kind of telegraphing" known, *i. e.*, Morse. Entering the room through double doors, on the southwest corner of the room, directly to our right is the copying press, terminus of the pneumatic tube before mentioned connecting with the office below—hat, coat and lunch closets, and local closet. Passing along directly north the first door to our left leads us into the offices of the Gold and Stock Reporting Telegraph Co., the next one leads into the ladies' lunch room, and the next into the check department of the service. Here is a large room, in which are employed a dozen or more as expert clerks as ever booked a message. Continuing our way to the extreme northwest corner of the operating room, we may observe in the corner one of Gray's private line instruments, which is attached to a line running to "Mx," the Wabash avenue office of the company. This instrument is being experimented on with a view to its adoption as an auxiliary to the delivery department of the company—it being the intention, as I understand, to send business for the southern part of the city, in the vicinity of "Mx," by that means. It certainly works very nicely, though rather slowly as yet, no one having become sufficiently expert to work it at a high rate of speed.

Turning round, we now have a full view of the

whole office, into which enter 93 wires, through six windows in the northern end of the room, from two massive poles. These wires run to two large Western Union Peg Switch Boards, standing between the two middle windows directly in the centre of that end of the room, and about three feet from the wall. One of these switch boards is 2½ feet and the other 1½ feet square, and they accommodate and distribute 82 wires. There are in all 18 operating tables in the room, each of which accommodates four sets of instruments. From the switch boards the wires are carried along the floor to the different tables. The tables being placed in three rows through the room, conveniently apart, the wires pass under the tables on the floor, and are covered by another raised floor extending the whole length of the room. The main battery wires enter the room through the wall from a room on our left, just before entering the operating room. Not a wire is to be seen in the room in front of the switch boards, except where they enter the windows before mentioned; the wall underneath and around these windows being neatly covered with paneling and nicely painted. The color of all the wood work in the room, except the tables, is either white or light buff, and is rather pleasing than otherwise to the eye. The tables are stained a dark walnut color. The table directly in the front of the room is fitted up with two of Stearns' Duplex Instruments, the first table near the entrance to the room with two Hicks repeaters, and in the other convenient parts of the room are three improved Button repeaters; the other tables being fitted up with four sets Morse instruments each. A large chimney in the centre of the room obstructs the view of the whole room when standing in certain parts of it.

The manager's desk, standing in the northeast corner, commands a view of nearly every table. Desks for the accommodation of the Associated Press agents are placed conveniently in different places of the room. The room is very well lighted and aired, indeed—having, besides the six windows mentioned on the northern end, 12 more on the eastern side. Much credit is due the able electricians and managers of the company, and all interested, for the tastefulness displayed and the comfort and convenience made for the employees. It is not necessary to add that all are delighted with the change from the bare brick walled room they were obliged to occupy all last winter. The ladies are not in a separate room, as under the old arrangement before the fire.

The following items of general telegraphic information may prove of interest to the readers of THE TELEGRAPHIC:

The Chicago, Danville and Vincennes Railroad, 128 miles long, which was completed last December, has now a line of telegraph. There are 11 offices on the line, which extends from Chicago to Milford and Danville, Ill. Mr. W. J. Logan is chief operator of the line, and has his head line and his headquarters at "Od" Chicago office.

The Western Union Company do commercial business over this line with the following offices: Beecher, Grant, Momence, St. Anne, Papsineau, Watseka Depot, Hoopstown, Danville Depot, Lovejoy and Milford. The line has been built about three months and is a very fair working wire. We are under obligations to Mr. A. P. Koehler, at Watseka, Ill., for courtesies over this wire. Among our corps of telegraphers here are not a few who have rendered valuable service to the Government, as operators "during the late unpleasantness." They manifest great interest in the movement regarding bounty, and regret very much that the operators who went to Washington, ostensibly to present the matter to Congress, failed to keep their appointment with the House Military Committee, after securing one. We are in hopes there will be some definite move made by some one in authority, so that the matter can be presented to Congress in proper shape at the next session. "Camp Lincoln," in your issue of May 25th, seems to "hit the nail on the head," but individual action we fear will not accomplish the desired end, unless some one in authority gives us a lift. Those interested here have suggested to me that General Stager, who was General in charge of all the military telegraphs during the war, should interest himself in their behalf, as he is certainly the proper person to move in this matter. "Lead on, General, we will follow you." A private communication to him, signed by all concerned, or by each one separately, would be enough to call his attention to this matter, and cause a movement to be made "all along the line."

There is a clause in Mr. Craig's letter, in your issue of June 15th, "Automatic vs. Morse Telegraphy," that your correspondent as well as others interested cannot see through. It reads thus: "There are no twenty Morse operators in the country who could 'call through' a line with twenty offices and take and send an average of even sixty words per hour!" Please enlighten us.

Considerable stir is being made in regard to the formation of a Telegrapher's Mutual Insurance Association here in the West, on a firm basis, that will coincide with the views of the deep thinkers on that subject, in this "neck o' woods." The New York Association does not come up to our views, nor can we get the officers of that association to give our suggestions the attention that we consider is due us as members of that institution—all our efforts in that direction being misconstrued. They seem to think that their efforts are not appreciated. All the managers of the concern are elected or appointed—how? We out this way

don't know. If the members in different parts of the country could be notified how to vote when an election of officers was to take place, and thus have a voice in the management, it would be much more satisfactory. It looks too much now as if it was the intention to keep it a New York Institution. Would it not be better to increase the membership without limitation, and pay the secretary and treasurer a small salary, making him responsible for all moneys, etc. In a short time the membership would increase to such an extent that the interest of the funds of the association, if judiciously invested, would pay the expenses of the same. We wish it to be distinctly understood that we highly appreciate what has been done for us in the formation of such a society by our New York brethren—they having performed all this service gratuitously, and as well as it could be performed under the present rules of the association—but we wish to have a voice in this matter, and to see it made a world-wide affair. Let us hear from others on this subject.

The postal telegraph schemes that have tried to engross so much attention during the Congressional session just closed meets with no favor whatever among the fraternity here—your views of the subject being generally coincided with. "Let us have peace" on this subject "ye mighty lords of the nation."

We wish to make a few suggestions in regard to the delay in the delivery of important messages in places remote from telegraph offices. It is generally the case that a message of this description is held at the office nearest it until the amount of charges for special delivery is telegraphed to the sending office and a reply received as to whether charges are guaranteed or not. This is not a proper way to do telegraph business. The manager of every country office should make it his business to ascertain what villages, towns or settlements are adjacent to their offices, and what daily conveyances or inhabitants of such places visit the town in which their office is situated, and arrange with them for as small a sum as possible for the delivery of telegrams. They could be instructed by the manager to call and see him every time they came to town and ascertain if any telegrams for parties on their route home await delivery. After a fixed rate was established it would be very little trouble to notify the District Superintendent, giving the names of places. This action would be fully appreciated by the Superintendent, and he could notify the general offices, and they in turn the smaller offices, until in a short time the most remote places of the country would virtually have nearly as good facilities as the town wherein the telegraph office was situated.

It is frequently the case that the charges for special delivery are more than double the amount of telegraphic rates. This is all wrong. By inaugurating such a system as I propose, and which can be done by energetic managers in almost every small town, these charges can be reduced to a mere nominal sum. Our country cousins must not think, because they are placed in charge of a small office, that their duties consist only in sending and receiving the messages destined for their particular office. The road to promotion for many a good country operator may lie in just such trifling (apparently) endeavors. An energetic man only has to work, and promotion comes soon or later as a natural result.

Now, I would like to say a few words more to my country brethren, and especially those on railroad lines where the railroad officials "ALLOW" commercial business to be transacted under certain restriction. It was not intended that "19" should be used to drive commercial business off the line, to allow you to send an ordinary railroad message after the commercial operator has been fortunate enough to get circuit, nor was the abbreviation "8" ever intended to be used to prevent a commercial operator from taking circuit away when you are talking about your "love conquests," etc. Be more gentlemanly in your conduct and you will find very few operators in the larger offices who will not treat you in a gentlemanly manner in return. The operator who works the way wires generally has three or four wires to attend, with business for nearly every office. When he gets circuit you should allow him to proceed, unless "train orders" or something equally as important demands you to take circuit away. In such case you should use your influence to get it for him again as soon as possible, or he may be obliged to leave your wire and go to another, where he may be engaged so long that the business for your line may be seriously delayed. Our experience in railroad business, and also occasionally working the wires referred to, induces us to call the attention of the R. R. operators to this very detrimental practice. Commercial operators, who think themselves better operators than you, after having six to eight years' experience more than you, and who show that they think so by their actions over the wire, are not entirely "compos mentis," and are not worthy any attention from you. All the contention for circuit would be obviated by a little consideration on your part, and the time the line is occupied by such contention could be used advantageously to both the railroad and commercial company. Will not our worthy R. R. chief operators give this matter their attention. OCCASIONAL.

Information Desired.

OHIO, June 25.

TO THE EDITOR OF THE TELEGRAPHIC.

WILL some of the readers of THE TELEGRAPHIC be kind enough to furnish me whatever information they can on the following subject, and greatly oblige?

went from New York State in a New York regiment; was detailed some six weeks after enlisting into the Government Telegraph Department, where I remained from the latter part of September, 1864, until August, 1865. While at Petersburg, Va., I got a furlough for ten days, and while at home my regiment came on to New York and was mustered out. I returned to Petersburg, but had to leave in a few weeks again on account of sickness. While in New York, on my way home, I could not find out anything in regard to my discharge. What I desire to know is, how to get my discharge, and who to, and where should I write; also would I be entitled to receive my portion of the Land Bounty (provided it passes), the same as those who were in the service a greater length of time than I was? An early answer through the columns of THE TELEGRAPHY will be received by
JAMES.

Personals.

Mr. PETER STEWART, chief operator of the Hawkeye Telegraph Company, and asst. train despatcher of the Central R. R. of Iowa, sailed June 8th, in the steamship Columbia, for Glasgow, on a leave of absence, to visit friends in Scotland.

Mr. T. C. CONNELL has accepted a situation as operator in the Superintendent's office of the Hawkeye Telegraph Company, at Marshalltown, Iowa.

Mr. C. A. DEWEY, formerly of the Western Union Company, has accepted a position in the Hawkeye Telegraph Company's office at Albia, Iowa.

Mr. M. S. BACON has resigned from the New Orleans, La., Pacific and Atlantic office, and accepts a position in the Western Union office, same city.

Mr. JOHN SWINDELL has resigned from the New Orleans, La., Western Union office, and takes a position in the Galveston, Texas, office of the same company.

Mr. GUS. CARROLL, formerly working "Mu" office of the Metropolitan Co., of Chicago, has been transferred by the Western Union main office, to work one of Gray's Private Line Printers, days.

Mr. CHARLES LITHGOW has been transferred from Morse Gold and Stock office to the Western Union main office, day force.

Mr. WILLIAM LINTON, of the Atlantic and Pacific Cleveland, Ohio, office, has accepted a situation on the night force of the Western Union main office at Chicago, Ill.

Mr. MOORE, of the St. Louis, Mo., Pacific and Atlantic office, has accepted a position on the Western Union office, Chicago, Ill., day force.

Mr. D. T. FRANCIS, formerly manager of the Erie, Pa., Western Union office, has accepted a situation on the night force of the same company at the Chicago, Ill., office.

Mr. G. S. CARROLL has accepted a position on the Western Union Chicago, Ill., main office day staff.

Mr. JAMES BLAIR, formerly night check boy at the Western Union Chicago, Ill., main office, has been appointed operator at "W. P." Metropolitan Company's office.

Miss SMITH, of Fort Atkinson, Wis., has accepted a situation in the Western Union Chicago, Ill., office.

Mr. CHAS. H. KELLY has been promoted to the position of second assistant night manager of the Western Union Chicago, Ill., office.

Mr. H. H. HUNT, night report operator, Western Union Chicago, Ill., main office, who has been "having a time" down in Michigan, has returned, and been transferred to the day staff in the same office.

The Telegraph.

The North Shore Telegraph of Long Island.

An office has been opened on the line of the North Shore Telegraph Company of Long Island, on the Sea Cliff Grove Association's grounds, at Glen Cove, L. I., and Miss Emily Beamer has been appointed operator. Another office has been opened on the same line in the Pavilion Hotel, at the steamboat landing at Glen Cove. All three of the Glen Cove offices on this line are doing an excellent business, and the people in that locality are much pleased at having secured such excellent telegraphic accommodations. The telegraph has long been needed in this section of the island, and will no doubt prove beneficial in furthering the rapid development which is now taking place, of its advantages as a summer residence and resort.

The first of the series of camp meetings which are to take place this summer at Sea Cliff Grove commenced on the 3d inst., and will continue for days.

The North Shore Telegraph Company connects with the Atlantic and Pacific Company at Brooklyn and New York.

Appointment of Director of the International Bureau of Telegraphic Administration.

DURING its session of the 24th of May the Swiss Federal Council proceeded to nominate a director of the International Bureau of Telegraphic Administrations, a position which has been vacant since the departure of Mr. Curleod, at the commencement of the year 1870.

Upon a proposition of the postal department M. Lendi, director of the telegraphs of the Confederation, who has been in charge *ad interim* of the direction of the International Bureau, was officially chosen to fill that position, the appointment taking effect on and after the 1st of June. After that date M. Lendi ceased to be a director of the Swiss telegraphs.

Foreign Telegraphic Notes.

THE Spanish Government have granted a concession for a submarine cable between Manila and the Coast of Asia, and a company is now being formed to carry out the enterprise.

On the occasion of opening the new telegraphic lines between Berlin and London a complimentary message was sent from the Emperor to Queen Victoria, at Balmoral, by way of inauguration, in which a hope was expressed that Germany and England may, by this new mode of communication, be more closely and affectionately united.

The total number of messages forwarded from postal telegraph stations in Great Britain during the week ended June 8th, 1872, was 286,687—an increase over the corresponding week of last year of 64,197.

A meeting of the Liverpool telegraphists was held on Saturday evening, a few weeks since, for the purpose of presenting a testimonial to Mr. W. H. Evans, for many years connected with the late Magnetic Telegraph Company, and until recently in the service of the postal authorities on the electricians' staff, he being about to leave England for Canada. The presentation took the form of a highly illuminated address, a beautiful gold locket (subscribed for by the ladies connected with the department), scarf pin, designed by Mr. Jacobs, Church street, and a copy of Shakespeare's works, handsomely bound.

The Transandine telegraph line from Santa Rosa, Argentine Republic, to Santiago, Chili, has been formally and successfully opened.

Telegraphic Brevities.

THE Hawkeye Telegraph Company have extended their lines to, and opened an office at North Wood, Iowa, and have appointed Mr. J. F. Stickle operator.

The Czar has to support his telegraph lines across the steppes on brick pillars—no wood being available.

Association of Postal and Telegraph Employees in Great Britain.

FROM a communication published in a recent number of the *Mechanics' Magazine*, of London, "Signed, on behalf of the Council, E. Hawkins, Secretary," it appears that the Telegraph and Post-office employees of Great Britain have established a society under the title of "The United Kingdom General Post-office and Telegraph Service Benefit Society." The objects of the society are stated by the Secretary to be, "to unite the whole of the Post-office and Telegraph employees of England, Ireland and Scotland in one common bond of brotherhood, and to aid and assist its members." Its offices are at 26 Olney street, Walworth, London, S. E., and all Post-office and Telegraph employees in the kingdom are invited to become members.

Preparing Telegraph Poles.

WHEN the telegraph system of England was transferred to the Government, arrangements were made with various contractors for providing the trees necessary for supplying the demand of the prospective increase of telegraphic communication. In the North of Ireland Messrs. Hamilton, of Cookstown, were the contractors, and a glance at their process of manufacture may not be uninteresting. The preparation of the trees which are to serve as telegraph poles is under the superintendence of a Government official, and a large staff of workmen are engaged in the process. The manufactory, as it may be termed, is situated in the middle of an extensive field, and consists in the first place of a quadrangular structure—four strong poles some sixty feet in height forming the angular points. Within six feet of the top is a platform, on which are two or three vats, each capable of containing two hundred gallons. In the bottom portion of this structure are pumps for the purpose of forcing a liquid, chemically prepared, into the vessels above; the principal ingredient, besides water, is sulphate of copper. From these vessels two systems of tubing are carried downwards to the ground, and continued along the surface forward to a distance of a couple of hundred yards, in a direction at right angles to the front of the rectangular structure already mentioned. Raised at a slight elevation from the ground, and placed at right angles to these tubes, lie the trees to be operated upon, with their thicker ends inward. At intervals of twelve or fifteen inches in this horizontal tubing is placed a series of taps, each connected by a short India rubber tube to the end of a tree, to which it is secured by means of clamps and screws, and rendered water tight by a sort of nozzle. By means of cocks at the upper end of the horizontal piping the solution in the vats is permitted to descend. The pressure exerted from above forces it into the pipes through the India rubber tubing and the trees, traversing them in the direction of

their fibre. In a short time the sap and a portion of the chemical solution are seen to ooze slowly from the smaller end of the tree, where they fall into a sort of wooden gutter, inclined at such an angle as causes them to run back to a cistern near to where they had been originally prepared. After undergoing some filtration here this is placed along with the yet unused liquid, and again performs the circuit of the vats above and trees below. The time necessary for the complete saturation of the trees varies from ten days to three weeks, according to their quality and age. In this way an application of the principles of hydrodynamics, combined with what is little more than a mechanical chemical knowledge, enables the manufacturer to provide poles for telegraphic purposes which will resist the action of the atmosphere for at least five times as long as the telegraph poles formerly in use.—*Engineer*.

New Patents.

For the week ending June 11, and bearing that date.

No. 127,810.—ELECTRO-MAGNETIC MOTOR. John Taggart, Boston, Mass.

The rotary shaft C and ratchet wheel B, arranged and combined with the pawl carrier c' and its pawls, and with helices, slide rods, armatures, and a circuit breaker—all being substantially as described.

No. 127,844.—DISTRICT AND FIRE ALARM TELEGRAPH. Edward A. Calahan, Brooklyn, N. Y.

The circuit breaking wheel b, springs c and f, and pin 4, in combination with the magnet p, finger key i m, and electric connections, substantially as and for the purposes set forth.

No. 127,931.—ELECTRIC ANNUNCIATOR. Jacob B. Shannon, Philadelphia, Pa.

1. An electric annunciator, in which the covers for the numbers or characters designating the several rooms are caused to turn in one direction only, making a partial revolution when released in order to expose the numbers, and continuing the motion in the same direction, so as to complete the revolution when turned to cover the said number.

2. A lever armature, F, constructed substantially as described, so that when the circuit is broken it shall be repelled from the magnet by its own gravity.

3. The combination of the arms g at the inner end of the cover spindle or sleeve with the hooked armature F.

4. The combination, substantially as described, of the slide J and its projections i and i' with the arms h and h', at the inner end of the cover spindle or sleeve.

5. The combination of the cover, its arms g, h, and h', the hooked armature, and the slide J with its projections i and i', all substantially as specified.

For the week ending June 18, 1872, and bearing that date.

No. 128,094.—MAGNETIC BATH TUB. John R. Anderson, New York.

In combination with a bath tub a metallic frame, consisting of a perforated top plate, B, and hinged side plates C, or their equivalents, provided with wooden strips m, n and w, and insulated on the outside, said frame being connected with one pole and the bath tub with the other pole of a battery, substantially as and for the purpose hereinbefore set forth.

No. 128,131.—PRINTING TELEGRAPH.—Thomas A. Edison, Newark, N. J.

A chain or cord under control of an electro-magnet, and pressed into contact with the surface of the paper, to produce a telegraphic character by embossing, substantially as set forth.

For the week ending June 25, 1872, and bearing that date.

No. 128,201.—ELECTRICAL LIGHTING ATTACHMENT FOR GAS-BURNERS. Henry C. Appleby, Connecticut, Ohio.

1. The combination of the movable conducting wires F and H attached to the sleeve or collar G, the spring O or its equivalent, and the movable sleeve G, substantially as and for the purposes described.

2. In connection with an electrophorus attached to a gas burner, the insulating nut E attached to the shaft C, the incline P, and the adjusting nut R, combined substantially as and for the purposes described.

No. 128,405.—AUTOMATIC TELEGRAPH TRANSMITTER AND RECEIVER. George Little, Rutherford Park, N. J.

1. The motor shaft d, insulated as set forth, in combination with the electro-magnets c, c', and connections through that shaft to the said magnets, substantially as set forth.

2. The screw regulator n and disk 13 applied to the motor-shaft d, in combination with the spring 12, acting upon the screw n, for the purposes and as specified.

3. The arm g, insulated at 31, and connected by the spring 26 with the insulated binder 25, substantially as and for the purposes set forth.

4. The trough s for the paper, made with an adjustable side, to vary the width of the trough, for the purposes set forth.

5. The armatures of the motor, made of soft iron soldered to a cast metal core, as and for the purposes set forth.

6. The mitre wheels n² 21, with diagonally cut teeth, applied to and combined with the motor shaft d and roller n¹, shaft 20, as and for the purposes set forth.

7. The rollers or stylus upon a tang or pin, and removable from the arm g, as and for the purposes set forth.

Recent British Patent.

No. 2,150.—W. R. LAKE, Southampton Buildings, London. SIGNAL APPARATUS. Dated August 15, 1871.

Keys acted on by the wheels of a locomotive or carriage serve to throw an electric current to or from the signals situated on the side of the railway, so that by the action of the train itself the signals are first put on, then kept on till the train has passed the point of danger, and finally taken off again. With the line keys and their connections are also combined crossing signals, to be operated similarly by an approaching train. Also, a switch signal, actuated by a key connected to the switch rails, which connects a signal by line wires, so that whenever the switch is turned from the main line the circuits through the magnets are closed and the signals are displayed or set in motion, and as soon as the switch is turned back to the main line the signals are taken off or stopped. Also, a drawbridge signal, the motion of which depends upon a key which bears against the lock bolt of the draw, and connects with a signal, so that whenever moved back the circuit through the signal magnet is closed, and the signals are put on and kept on until the lock bolt is returned to its locking position. In this case the signal may depend upon gravity for its motion.

Died.

PIERSON.—On Wednesday, June 19th, at Old Pierston, in the 84th year of his age.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, JULY 6, 1872.

A Few Seasonable Reflections and Suggestions.

It is hot; It is very hot! and the heated term is likely to continue for some weeks to come. Those who have been, for the last year, industriously engaged in business, are considering how they shall obtain relaxation and recreation, for a time at least, from their labors and duties. To telegraphers the annually recurring question of vacations or no vacations is one of much interest. It has heretofore been discussed at much length by our correspondents in the columns of THE TELEGRAPHER, and it is about time for the annual renewal of the discussion.

It was formerly the custom for managers of telegraph companies and lines to afford a vacation of a week or two to employes who had labored faithfully during the months preceding the summer, and to furnish relief assistance, where such was needed, to officers in turn, that the regular force might have opportunity to recreate and renew their wasted energies. With the expansion of the business to the proportions which it has of late years attained, and the great increase in the number of the employes, this beneficent custom has on the leading lines been abandoned, and, generally, if vacations are allowed at all, it is at the expense of the employe who takes it. It is argued that to afford a vacation to the employes of a company like the Western Union, for instance, is too great a tax upon the company. While we are willing to admit that there is much to be said on both sides of this question, yet we are confident that the real interests of the company would be advanced by a liberal and even generous treatment of their employes in this matter. Telegraphy is a very confining and exhausting business. It taxes the energies and health of the employes, and the compensation paid them is not generally so large as to leave any considerable surplus to expend in securing even a temporary release from duty. We believe that the majority of the employes would render better and more efficient service in return for such a favor, which would more than compensate any extra expense that this relief might be to the companies. We commend this view to the consideration of telegraph Superintendents and managers. In many of the smaller offices, where more than one operator is employed, arrangements may be made by which they may in turn take a vacation without necessitating the employment of extra help. In such cases we can see no reason why this should not be permitted, although we have known of cases where permission to make such temporary arrangements has been refused. This we regard as not merely poor policy but an injustice to the employes.

While the summer heat continues telegraphers should be very careful, and as regular in their manner of living as the nature of the employment will permit, in order that they may retain their health and vigor. All excesses should be avoided, and moderate exercise be taken regularly whenever possible. Moderation in eating and drinking, and a proper attention to hygiene, will do much toward obviating the injurious effects of confinement to offices and desks. Too much care cannot be exercised in this respect.

The contest between labor and capital seems to be very active and bitter this season, but has not extended to the telegraph business. Eight hour strikes have disarranged the industrial economy, especially in this city, and many thousands of mechanics are now and have been for weeks idle, and large workshops and manufactories are silent, production in the meantime being suspended. The damage already done amounts to millions of dollars, and is likely to be yet largely increased. It is a reflection upon our civilization that some more sensible means of adjusting these differences cannot be devised. It is, that almost always the laborers and

employes are, in the end, the principal sufferers. Although the relations between telegraph employers and employes are not just what they should be, and what we would have them, still we must admit that a strike would be about the worst possible way in which they could be attempted to be remedied. There should be, however, in telegraphy, and in every business and employment where reciprocal relations exist between capital and labor, some method by which justice could be done between them. It is for this end that we have heretofore advocated a union or organization of the telegraph employes which should enable them unitedly to present their case, and, by a conference and agreement with telegraph companies and managers, secure such reforms and improvements as the best interests of all concerned require. We have and do advocate this in no agrarian spirit. It has never been the policy of THE TELEGRAPHER to unnecessarily create dissatisfaction or dissension. What we desire is the real interests of all parties, and we believe that these can only be secured by joint action on the part of the employers and employes. The time will come when there will again be a telegraphic organization, and it depends very much upon the treatment which it shall receive from telegraph managers whether it shall be an organization such as we have above indicated or one which shall look only to the advancement of the interests, or what may be conceived to be the interests of the employes, without special reference to the effect upon the interests of telegraph companies or capital. Experience is a severe and costly teacher, but its lessons are apt to be effectual. Telegraphers will not repeat the errors and mistakes of the past, whatever new ones they may make.

We merely throw out these reflections and suggestions in a general way for the consideration of our readers. The weather is too hot for us to elaborate them, but this each can do for himself.

In a few weeks the summer will be over, and with cooler days will come a renewal of business activity, which will tax the telegraphic facilities of the country to the utmost, and in the meantime we hope that the telegraphic fraternity will generally have recuperated their energies to such an extent as shall enable them to render service to any amount that may be requisite.

As for ourselves, it is well known that editors have no need of vacations or recreations. We shall continue through the heated term, as at all other times, to present THE TELEGRAPHER weekly to our readers, with matter of such interest and importance that no telegrapher can afford to be without the paper. If, occasionally, we should fall short of this, it must be ascribed to the hot weather, and not to any permanent cause.

Electricity as a Watchman.

For the past few years the competition between the makers of so-called "burglar-proof safes" and the breakers thereof has been what is vulgarly but expressively termed "nip and tuck," and it has occasionally looked as if "tuck" was a little ahead. Chilled iron and hardened steel have been offset by diamond drills and nitro-glycerine, and we have even heard that the ox-hydrogen blowpipe has recently come into use for this purpose. It has long been very evident to all well informed scientific men that electricity is capable of affording the only adequate and absolute protection against burglary and theft. Yet, until a few days since, we never met with an electrical protector of this kind which might not in all probability be broken through by a person combining the knowledge of the professional burglar with that of the electrical expert, and having an acquaintance with the manner in which the apparatus is arranged.

The Electro-pneumatic Safe Protector, which is now on exhibition at the warerooms of Messrs. MARVIN & Co., 265 Broadway, is one of the most ingenious combinations of electrical and pneumatic power that has ever come under our notice, and, after a very thorough examination of it, we must confess that we can imagine no way in which the most expert operator can gain access to the safe without starting the alarm.

The principle of the arrangement is very simple, the safe being merely placed within a double walled tin case, from which the air is kept partially exhausted. The least puncture through this case admits the air, and, by means of an ingenious device, the circuit leading to the alarm is instantly broken, and the latter

sounded. The alarm itself is protected by a vacuum case in a similar manner. The circuits leading to the alarm are arranged in a cable in such a way that it is utterly impossible for the most skilful electrician to tamper with them by attaching a supplementary battery or in any other way without breaking or short circuiting the wires, either of which infallibly operates the alarm.

The foremost scientific men in the country have examined this apparatus, and none of them have yet been able to suggest any means of rendering the alarm inoperative.

Telegraphic Communication between Scotland and Canada.

THE Canadian Government has now under consideration a measure for laying a cable from Thurso, in the north part of Scotland, to be continued to Iceland, and make its first American station at Greenby Island, the narrowest point of the Straits of Belle Isle, then touching again at the east end of Anticosti, and then connecting with the existing Canadian telegraph system of Gaspe. The company obtained an act of incorporation about two years ago, and, being about to expire for non-usage, an extension was obtained during the last session of the Dominion Parliament. The company has recently acquired considerable strength by means of combinations which it has formed, and within the last few weeks Count de Raasloff, an eminent public man of Denmark, has been at Ottawa in the interests of the Great Northern Telegraph Company, which is lending its active support towards the construction of this cable. And, in addition to this source of strength, an arrangement has been made with the Great Western Telegraph line to work the two systems in common. If the cable be laid and the other arrangements carried out, Canada would be placed directly in communication with the West Indies and with the lines extending across the entire northern part of Europe and Asia, connecting Western Europe with China and Japan.

In the early part of last week a deputation was received by the Dominion authorities in reference to this important matter. The estimated cost of the cable is four million dollars, and the proposal made to the Government of Canada was that it should grant a guarantee of five per cent. upon this amount—that is, a sum equal to \$200,000 per annum. The Finance Minister stated that the Government would not be indisposed to consider a proposal by which an amount of business, say \$100,000 annually, would be guaranteed. The Montreal Board of Trade represented that it would be of the greatest importance to have the enterprise immediately proceeded with and vigorously prosecuted to its completion, because all the advantages before mentioned would be secured; and not only so, but because the incidental advantages of such connections would be incalculable, inasmuch as lateral branch lines would be established on both sides of the Gulf and River St. Lawrence, affording instant communication with the most dangerous parts of the coast in cases of shipwreck or other marine disaster, while great service might also be rendered to the fishery interests. The Governor-General in Council, it seems, has authority to afford a pecuniary guarantee. The Canadian press are satisfied, taking all the circumstances into account, that the Government would find itself sustained by public opinion in affording what moral and material support it can to the European Canadian Telegraph Company. Among the first questions Lord Dufferin will have to deal with is the proposition for an independent cable to Europe.—*New York Herald.*

The New Canadian Patent Law.

A NEW patent law has recently been adopted in Canada, much more favorable to foreign inventors than the old law.

If the invention is already the subject of a patent in the United States, the application for a Canadian patent must be filed within one year after the date of the American patent. The invention must not have been in public use or on sale for more than one year previous to the application in Canada. The patent may be obtained by the inventor or his assignee, but not by a mere importer or introducer.

The Government fees are twenty dollars in gold, or Canadian currency for five years; forty dollars for ten years; sixty dollars for fifteen years. The fees for the extension of a patent from five to ten years are twenty dollars; ten to fifteen years, twenty dollars; from five to fifteen years, forty dollars.

Changes in the United States Patent Office.

Gen. SAMUEL A. DUNCAN, who has been the Assistant Commissioner of Patents since the passage of the law creating the office in 1870, has recently resigned, for the purpose of forming a law partnership with Hon. S. S. Fisher, formerly Commissioner of Patents, and W. H. Fisher, under the firm of Fisher & Duncan, with offices in New York and Cincinnati.

The vacancy created by Gen. Duncan's resignation is now filled by Mr. J. M. Thatcher, from the Board of Examiners-in-Chief, and Gen. Ellis Spear, for several years examiner of the civil engineering class, has been promoted to the Board.

Steinheil used the earth as a return circuit for a telegraph line at Munich, Bavaria, in 1837.

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Are secured by the use of our Improved

**SYNCHRONIC BLOCK SIGNALS,
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One pair of the celebrated and favorite

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The popular

**ANDERS & CO.'S MAGNETO-DIAL TELEGRAPH
INSTRUMENTS,**

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for use, and can be operated by any person with a few minutes'
instruction.

SIGNAL BELL TELEGRAPHS.

A new combination, with Key on same base with the Bell, or
otherwise, as may be required. Made under the patent of F. L.
POPE.

COMBINATION RELAY AND KEY,

in an elegant Rosewood Base. Will work circuits of any length.
The popular

NONPAREIL TELEGRAPH APPARATUS,

for Amateurs, Students and Short Lines. Nearly 1,000 of these
Instruments have been sold since their introduction in December
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DAY'S KERITE COVERED WIRE.

16,000 MILES

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JOHNSON'S" WIRE

USED BY THE

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DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations
thrown out by the Manufacturers and Importers of other
Wires, reflecting upon the acknowledged superiority of
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Their Works are the Largest in the World.

The great advantage which they possess over other
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long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten,
breaks in Wire occur at joints, hence the less joints the
fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three
fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed
by the English Post-office Department.

A large stock always on hand and for sale at the lowest
market prices—both free and in bond.

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UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

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SUPERIORITY, VALUE

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UNIFORM RELIABILITY.

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Chicago, Ill.,
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Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
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Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
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The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the
apparatus may be distributed in a combination of circuits, and
the entire system successfully worked, without the constant per-
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the fire is instantaneously communicated to the members of
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These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System

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FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by
the Proprietors of these systems of

FIRE ALARM

AND

POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of
practical use, and that the efforts which have been repeatedly
made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to
adopt other systems having demonstrated their insufficiency
and unreliability, and resulted in their abandonment, and sub-
stitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMWELL & CO. are the owners of the
original **FARMER & CHANNING PATENTS**, one of the most
important of which has just been extended for seven years, and
during the past seventeen years have spared no expense or effort
to secure improvements, and the Systems are now covered by

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The most important improvement which the Proprietors have
adopted and introduced is the

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the introduction and operation of which involves so little ex-
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has met with the universal approbation and commendation of the

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is spared by the Proprietors to obtain and secure ANY POS-
SIBLE IMPROVEMENT which shall increase the

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RELIABILITY and

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of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruc-
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but that, in every community where it has been introduced for
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These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

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a most compact and reliable Switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

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COMPOUND RUBBER COVERED WIRE.

SUBTERRANEAN & AERIAL WIRES,

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We are now prepared to furnish, after an experience of three years, an Insulated Wire, which can be buried in the earth or exposed to rain and sun, or to the vapor of acids, without injury. Professor SILLIMAN, who has exposed it to the most destructive agencies, finds that it remains uninjured in an atmosphere of ozone, which would destroy gutta-percha in a few hours. It exceeds glass or any other known substance as a non-conductor.

We have made special arrangements to furnish this article or office purposes at a reduced rate.

ALSO, TO FURNISH

IRON CLAD CABLES,

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We shall be happy to furnish estimates for any amount and size of cable, which will be found to compete with any other construction, both in quality and price.

We manufacture the Genuine ELECTROPOION BATTERY, with Patent Platina Connection, introduced by us eight years since; also, THE ALPHABETICAL OR DIAL TELEGRAPH, now extensively used in this and other cities for private lines, being easily and quickly learned by any one.

We offer for sale, among other novelties, a SOUNDER that will work practically with a single DANIELL cell, a BATTERY that does not require to be taken down but once a year, and the very best MAIN LINE SOUNDERS made.

Our CATALOGUE, embracing a large amount of new matter and description, is now ready for distribution.

A **ERICAN COMPOUND**
TELEGRAPH LINE WIRE
COPPER FOR
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STEEL FOR
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The superiority of the COMPOUND TELEGRAPH WIRE, compared with iron, consists in its LIGHTNESS, reducing by over fifty per cent. the number of poles and insulators required;

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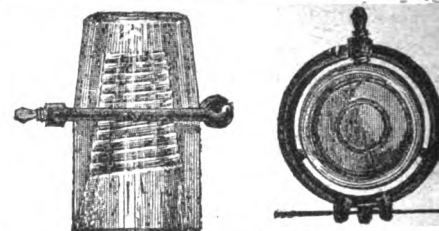
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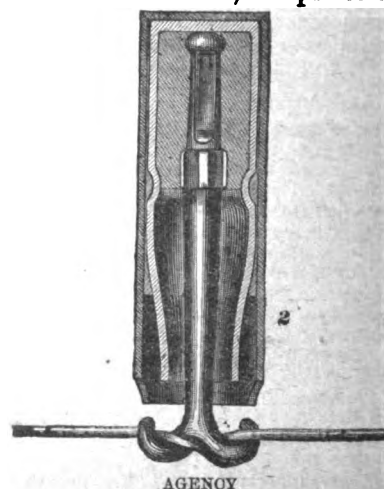
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The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 47.

New York, Saturday, July 13, 1872.

Whole No. 313

Original Articles.

Gaugain's Conical Multiplier and its Uses.

BY DAVID BROOKS.

"If a magnetized needle is submitted to the action of a circular current, placed in the magnetic meridian, when the centre of the needle occupies the summit of a cone, having for a base the circular current, the tangents of the angles of the deviation of the needle will be proportional to the force of the current when the height of the cone is equal to one fourth the diameter of its base." This discovery was made by M. Gaugain, an eminent French electrician.

M. Blavier, in his work on the electric telegraph, has mathematically demonstrated the correctness of the theorem of M. Gaugain within a very small fraction. For all practical purposes the tangents of the angles of deflection are proportional to the force of the current. The only galvanometer possessing the property, when the deflections are above 40° or 50° , is that constructed by M. Gaugain upon the above principle.

The tangent of the angle of 40° , for example, is .839, while the tangent of 80° is 5.67, or nearly seven times as great; and, accordingly, a current that will deflect the needle to 80° must be nearly seven times greater than one which is sufficient to deflect the needle to 40° , and over three hundred times that required to deflect it 1° , the tangent of which is .017.

Figure one is an engraving of one of these instruments, as constructed by Messrs Knox & Shain, mathematical instrument makers, of Philadelphia.

Figure two is a plan view, showing the manner in which two parallel wires are placed upon the surface of the cone. These wires are about No. 15 gauge, and have each a resistance of 0.14 Siemens units, or 0.28 units when both wires are included in the circuit. Their terminals are marked A and B B, respectively.

An instrument of this kind, recently constructed by Messrs. Knox & Shain for Gen. Marshall Lefferts, of the Gold and Stock Telegraph Company, is provided with an extra cone, wound with finer wire, and having a greater number of convolutions. This cone is placed in position directly opposite the one shown in the illustration, and has two parallel wires, one measuring .81 and the other .84 Siemens units. These two wires being placed side by side, and having an equal number of convolutions, will each have precisely the same effect upon the needle.

For the investigation of all problems relating to batteries and their action, and the demonstration of Ohm's law, this is the most convenient instrument yet devised.

There are few intelligent telegraphers at the present day who have not some practical knowledge of Ohm's law. Most of them are aware that the intensity of an electric current is in direct proportion to the electro-motive force, and inversely in proportion to the resistance. Thus, on a line of 100 miles, we get twice the strength with twenty cells that we do with ten cells, and fifty times as much with 50 cells as we do with one cell. Again, with a given battery we get twice the strength on a circuit of 100 miles that we do on one of 200 miles, and 100 times the strength on one mile that we do on 100 miles.

It is upon this same principle that the internal resistance of the battery itself is determined. Suppose, for example, that a telegraph line was broken at some point, and made a perfect ground at the break, and that a galvanometer placed in the circuit showed that the force of the current was, say, 30. Now, if we put in the same circuit an additional resistance, equal to ten miles of the line, and the force indicated by the galvanometer falls to fifteen, we know that the original length of line in circuit was also ten miles, for the reason that the addition of ten miles to this unknown circuit reduces the effect one half, and therefore the original resistance must have been equal to the resistance added, viz., ten miles.

In like manner, if we place the above described instrument in circuit, with a battery of 21 Callaud cells, and get a deflection of, say 61° , the tangent of which is 1.80, and then insert resistance in the circuit until we bring the needle to the degree corresponding to half the tangent of 1.80, which is .90, we find that it corresponds to 42° , and that to double resistance of the

circuit we must insert sufficient to bring the needle to 42° . If it required 109 units to do this, it is evident that the original resistance of the battery and galvanometer was also 109 units. Deducting the known resistance of the galvanometer coils ($0.84 + 0.84 = 1.68$ units) we have 107.35 units as the internal resistance of 21 cells of Callaud battery, or 5.11 units per cell. This is an actual measurement.

Therefore, to ascertain the internal resistance of a battery, we have the following

RULE.—Connect a tangent galvanometer in circuit with the battery and note the degree of deflection. Take the tangent of this degree from a table of tan-

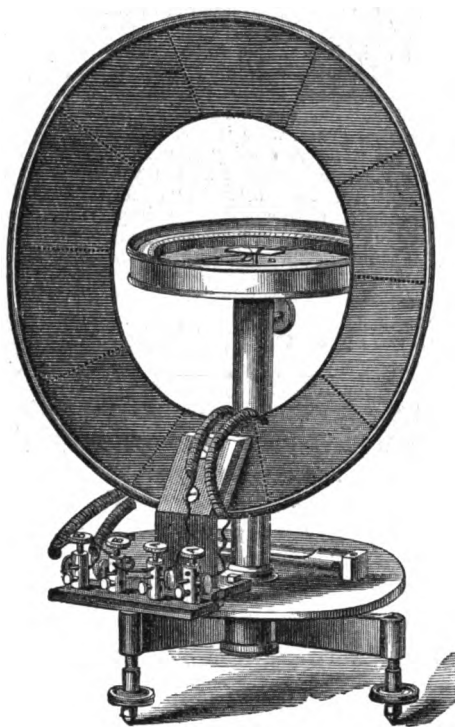


Fig. 1.

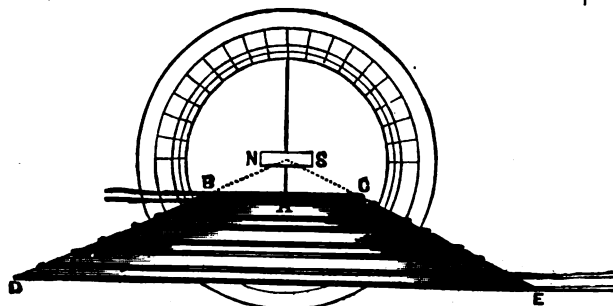


Fig. 2.

gents, and find the degree corresponding to half the tangent thus found. Add resistance until the deflection is reduced to the last named degree. Deduct the resistance of the galvanometer from the resistance added, and the remainder is the internal resistance of the battery.

Another, and more simple method, is that known as Latimer Clark's. In this method it is not necessary to refer to a table of tangents.

First, connect in the circuit one wire of the coil by attaching the wires to the terminals marked A A, which will give a deflection of, say 42° . Next, connect both wires of the coil in series (A A + B B). The effect upon the needle is now double what it was originally. Insert resistance until the deflection is reduced to what it was with A A alone (viz., 42°) and

the total resistance in circuit has been doubled. By connecting in B B a resistance equal to that of A A, which was originally in circuit, has been added, and the resistance inserted to reduce the deflection is equal to that of the battery itself. Hence his rule:

Connect the battery through one wire of the galvanometer only and note the deflection; then connect through both wires of the galvanometer (in series) and add resistance until the deflection is reduced to its original amount. The resistance thus added will be equal to the resistance of the battery.

The foregoing are the simplest methods of ascertaining the internal resistance of a battery, but they both require a set of resistance coils. By the following method the resistance of a battery may be found by the use of any convenient known resistance, such as a relay.

Suppose, for example, we connect the battery and galvanometer alone in circuit, by which we get a deflection of, say 55° , the tangent of which is 1.43; we then insert a relay of known resistance, say 90 units, in the circuit, which reduces the deflection to 37° , the tangent of which is 0.753. We can now ascertain the internal resistance of the battery by the following equation:

Let x = the original resistance, including galvanometer.

$$\text{Then } x : x + 90 :: .753 : 1.43.$$

From which we have $x = 100$.

Deducting resistance of galvanometer, 1.65 units, we have $100 - 1.65 = 98.35$ = resistance of battery.

For this measurement the following rule is applicable:

Connect the battery and galvanometer in circuit and note the tangent of the deflection. Call this the greater tangent. Insert any convenient known resistance and note the tangent of the reduced deflection. Call this the lesser tangent. Multiply the lesser tangent by the inserted resistance, and divide the product by the difference between the lesser and the greater tangents. From the quotient deduct the resistance of the galvanometer, and the remainder is the internal resistance of the battery.

In measurements of this nature the resistance inserted should be as nearly equal to that of the battery as convenient. In measuring the resistance of one or two cells an ordinary sounder will answer well. With 30 or more cells take a relay of 50 to 150 units' resistance.

For example, suppose it is required to find the resistance of a battery of two cells. With the galvanometer alone we get a deflection of 56° , tangent 1.48.

Inserting a sounder of 5 units' resistance we get 44° , tangent .965. Therefore,

	UNIT.
Lesser tangent.....	.965
Multiply by inserted resistance.....	5

Divide by difference between }
greater and lesser tangent. } .515.....

Deduct resistance of galvanometer..... 1.65

And resistance of the two cells = 7.72

If it is required to take the resistance of one cell in fractions of a unit, and the cell has only from one to two units' resistance, it can be determined by the effect upon the needle of the addition of the resistance of one of the galvanometer coils.

If we connect the B B coil circuit with one Callaud cell, and note the deflection, say 41° , of which the tangent is .869, then connect in both coils, and we get, say 55° , tangent 1.455. This tangent, however, is not twice that of one coil, because of the resistance of the circuit being increased 0.81 units. Half of 1.455 is .727, and the difference between .727 and .869 is due to the increased resistance of 0.81 units. We may, therefore, make an equation as follows:

$$x : x + .81 :: .727 : .869$$

Reducing this, we get the value of x , the original resistance—

$$x = 4.14 \text{ units.}$$

Deducting the resistance of B B, 0.85 units, we have as the resistance of the cell 3.29 units. Therefore, in order to obtain the resistance of a single cell in hun-

dredths of a unit, without the aid of resistance coils, we may make use of the following rule:

Connect the battery and one wire of the galvanometer and note the tangent of the deflection; call this the greater tangent. Then connect both wires of the galvanometer and take the tangent of this deflection; divide this by two and call the quotient the lesser tangent. Multiply the lesser tangent by the resistance of the coil last connected in, and divide the product by the difference between the greater and lesser tangent. From the quotient deduct the resistance of the first coil and the remainder is the resistance of the cell.

Taking the same cell, and using B B upon each side in such a manner as to bring each in the circuit, the coarse wire B B having a resistance of 0.14 units, and B B of the finer wire 0.84 units, we then have in the circuit a total of 0.98 units. The deflection is $54\frac{1}{2}^\circ$, tangent 1.402. Then connect in A A of the coarse wire, 0.14 units, and A A of the finer wire, 0.81 units—total 0.95 units added—and we now get a deflection of $66\frac{1}{2}^\circ$, tangent 2.30—half of which is 1.15. Working this out by the last rule, and using the wires marked A A on each side for the first observation, and then all the wires for the second, we obtain 4.33 as the value of α . Deducting 0.98 units as the resistance of the wires included in α , and we have 3.35 as the resistance of the same cell—a difference of only 0.06 units, or less than two per cent.

(To be continued.)

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

"Automatic" vs. "Morse" Telegraphy.

TO THE EDITOR OF THE TELEGRAPHIC.

YOUR correspondent, "Occasional," appears to want some additional light upon the subject of automatic telegraphy, in its application to side lines and way offices, and, with your permission, I will give him the information which he desires.

In your editorial of June 8th you expressed your belief that automatic telegraphy would "find its mission as an auxiliary to the Morse system, and be chiefly used on through routes." As an original and consistent friend and advocate of automatic telegraphy, I felt bound to enter my earnest dissent from your faint praise of the new system, and I attempted to illustrate the comparative advantages of the automatic and Morse systems, by assuming the existence of a side line of twenty offices, worked in one circuit. Adhering now to the same proposition, I will try to illustrate it in a way that will, I hope, be clear to the comprehension of "Occasional" and "others interested."

However much you and other enthusiastic admirers of the Morse system may dissent from the official testimony of the able gentleman who presides over the great monopoly as to the average speed of Morse operators—Mr. Orton asserting that "six hundred words per hour was an excellent average," whilst you claim a considerable larger number—I am sure all will admit that, upon side lines and at way offices, five hundred words per hour is the outside that could be hoped for by the Morse system.

The "Morse" wire, serving twenty offices, might possibly be "called through" once in every hour, and each office might transmit an average of twenty-five words, using the wire every moment.

The "automatic" wire, by reducing its known speed of transmission from fifteen hundred to five hundred words per minute, and the speed of the "Perforator" and the "Printer" from fifty to thirty words per minute, could be "called through" once in every hour, and each of the twenty offices could transmit an average of seven hundred words, using the wire less than half the time.

These statements, I apprehend, correctly represent the comparative advantages of the two systems for side lines or small offices, and abundantly prove the correctness of my assertion, in the communication to which "Occasional" refers, that the automatic system presents even greater advantages (over the Morse) for side lines or small offices than for through lines and large offices.

This fact may, perhaps, be still better illustrated by assuming that each of the twenty Morse offices has an average of one hundred words to transmit, which will occupy the wire continuously for four hours, and making it possible to "call through" three times in twelve hours.

Twenty automatic offices have each an average of one hundred words to transmit, and they will be perforated by the twenty operators inside of four minutes—will then be transmitted in four minutes more, and at the end of every twelve minutes, each of the twenty offices will have been "called," and the full two thousand words will have been perforated, transmitted, and copied in fair Roman print; thus accomplishing easily, and with superior reliability, in twelve minutes, by the automatic system, the same amount of telegraphing as would employ a Morse wire and an equal number of operators sixty minutes.

The twenty Morse offices could be "called" once in

four hours—the twenty automatic offices could be "called" five times in every hour.

In working the Morse system eighteen out of the twenty operators must necessarily stand idle, as two only can use the wire at the same time, and the capacity of the wire is limited to an average, on side lines, of about eight or nine words per minute; but with the automatic system almost the whole labor is in perforating and copying (printing) the messages; and, of course, as these operations do not at all interfere with the use of the wire, each of the twenty operators may be kept constantly at work, and one doing as much as another to advance the business of the line.

D. H. CRAIG.

That Ten Year Old Child.

TO THE EDITOR OF THE TELEGRAPHIC.

MR. D. H. CRAIG has favored us, through the columns of THE TELEGRAPHIC, with some very interesting communications upon the automatic telegraph. I do not intend to criticise the telegraphic marvels which he asserts have already been accomplished. There is no doubt but that automatic telegraphy is destined to occupy an important position in the future of the telegraph, but it is not yet clear to me, or to many others, that all of Mr. Craig's exceedingly sanguine expectations and predictions will be ultimately realized.

In your paper for June 29 Mr. Craig refers to simple and inexpensive machinery, which can be worked by a child at sight. This child frequently appears in Mr. Craig's automatic communications and statements, and it has been suggested that he or she must be a very smart child. I can stand friend Craig's "low salaried young ladies," but must protest against this evidently favorite and precocious child of his. From some specimens of telegraph operators that may be seen, the impression might legitimately be received that telegraphy does not require a very high order of intellect or education in its operators; but Mr. Craig has a monopoly of the system which is so simple that a child—in other communications I think the simple child is qualified by an age of ten years—can operate it at sight. It has been well said that "men (and women) are but children of a larger growth;" and were it not that Mr. Craig also instances his "low salaried young ladies," and fixes the age of his infant prodigy at ten years, we might imagine that it was one of these "children" that was really intended. With a system so simple that "low salaried young ladies" and "ten year old children" can work it at sight, and a rapidity of transmission which would suffice to forward copy enough to fill one of our blank sheets in fifteen minutes, telegraphy is really experiencing a wonderful development. Cannot Mr. Craig "let us up" on the child if we accept the rest? DIXON.

The Military Bounty Act.—No Lobbying Desired. —The Western Union Telegraph Company and the Employees.

TO THE EDITOR OF THE TELEGRAPHIC.

IN your issue of June 8th I notice a communication from "Military," in which he "suggests that the writing of letters to members of Congress, urging favorable action on the bounty bill pending before the House Military Committee, is likely to do more harm than good."

I would give "Military" all the credit his suggestion entitles him to; at the same time I would remark that a suggestion may be a good one or a bad one. If "Military" knows what he is talking about he had better say what he knows and let suggestions alone. If the success of the measure is to depend upon the lobbying process I want nothing to do with it, and don't want any land gotten in that way. If the unanimously expressed desire, respectfully and individually made, is not sufficient to carry through the claim, then I wash my hands of all connection with it.

There are no "necessary facts to be collected and put into intelligible shape." If the gentlemen who have the matter in hand undertook it as a matter of justice, they will be seconded by every man who was a military operator; but if a committee of operators is to be paid to dog them about, I will venture to say that nothing whatever will be done by the projectors; and further, that, so far as they are concerned, it is merely a job.

The gullibility of telegraphers is sickening. Not content with the experience gained by presenting every District Superintendent with a gold watch, they go on and build a monument to the most conceited nobody I know of, and now they are asked to give again—and this time to a man who has for a long time occupied a position where he might have spoken out boldly and with effect in favor of employés of the W. U. Telegraph Company now and then, but who lacked the courage, and has remained as effectually muzzled as if he had sold his birth-right, soul and body, for so many dollars. If he had been a man deserving a present from the fraternity he would have said and done things long ago which would have taken his head off.

I know of no officer within the employ of the W. U. Company who deserves a penny from the fraternity. I know not one who has risked or lost anything by fighting for the craft. Every employé who holds a position of trust is under bonds for twice the amount he ever holds. This is deeply degrading, to my sense,

and I must say that men who will start a move of the last kind are deserving of pity as well as contempt.

Employés of the W. U. Company, at least, may lay it down as a self-evident truth that any and every move fostered by that company is inimical to the operators, and it may confidently be expected that soon a poor house will be started, in order that failing hands may find a home in which to die—having failed to receive compensation sufficient to subsist and lay up, too.

The Telegraphers' Insurance is a mild form of the poor house business, and, like the genuine article, is supported by the gullibles, with a stated stipend from the company of say—well, enough to keep them in countenance with the "boys."

I would say that this bounty matter is going to take the same direction. If the thing keeps on, in a few years there will be dozens of funds in different stages of beggarliness.

Gentlemen of the key, I say to you, each and every one, individually, you have no other friend than that under your own shirt bosom. Beware of every kind of toadyism; every grain of it detracts from your manhood and independence. If so-and-so have well and faithfully served the telegraph company, well and good—and if the compensation they have received has not been so great as they deserve, let the company make them a donation, and not instigate begging of the poor, bonded, distrusted employé. CAMP LINCOLN.

Humorous.

TO THE EDITOR OF THE TELEGRAPHIC.

THE operators on the Great Western line between Chicago and Omaha have a very amusing idea of the use and signification of numerals and abbreviations, when used in conversation upon the line. It is not an unusual thing to hear one operator inquire of another, "What is the 18?" The answer will perhaps be, "The 18 is a pole is down." Two operators engaged in pleasant conversation will generally ask each other, "How is the 77 at your office this month?" and ten to one that the other asks, "Who is the 134 at the key?" 18, in their vernacular, is the general term expressing "wire down," "cross," or "difficulty" of any kind. A few days since two of the lady operators on this model circuit were chatting, when a *genus homo* broke in and said, "You're an old maid." "Ha, ha!" quickly vociferated the younger and more sprightly of the two, "that's so—that's me. Shoo-fly, don't 18 me." I'll subside. QUILL.

Another Telegraphic Base Ball Victory.

NEW ORLEANS, LA., July 5.

TO THE EDITOR OF THE TELEGRAPHIC.

THE members of the Morse (Base Ball) Club duly appreciate the kindness and courtesy shown them in the columns of THE TELEGRAPHIC, and hope that they are not boring your readers too much in the gratification of their desire to have the record of their games published in the operators' organ.

On Sunday last the club went on a "tour" to Biloxi, where they had a most enjoyable time, and are under much obligation to our worthy Superintendent, Mr. Flanery, through whose kind offices they obtained free transportation over the Mobile Railroad.

The following, from the *Picayune* of this city, tells the story of the trip and its results as well or better than I could do it:

"At an early hour Sunday morning the Morse Club took the excursion train on the Mobile Railroad on a ball tossing trip to Biloxi, where they had made arrangements to cross bats with the famous R. E. Lee Club of that thriving village.

"After a pleasant ride of nearly four hours the boys reached their journey's end, where they found their advance guard, who had preceded them Saturday afternoon, anxiously awaiting their safe arrival. The boys were taken in charge by their friends and marched over to 'Bill Smith's,' where they made their headquarters during their stay. The interval before dinner was passed most pleasantly—some engaging in billiard games, ball throwing and bathing.

"At two o'clock Capt. Bill Smith announced dinner, the summons for which was obeyed with great alacrity, and full justice done at the table, which was most bountifully supplied with fresh fish, oysters, vegetables, etc. Immediately after dinner the boys proceeded to the field selected for the contest—a beautiful green sward, about two hundred yards from the railroad depot.

"A large number of spectators were present, including many ladies. On this occasion the telegraphers for the first time made their appearance in their new uniforms, consisting of Lisle thread shirts, white flannel pants with green cord, green worsted belt, green stockings, and Dolly Varden hat.

"After the selection of Mr. L. Kearnes for the unenviable position of umpire, the game was called at 3:20 P. M., with the Lees at the bat. The game, up to the sixth innings, was well contested, the fine fielding and heavy batting of the telegraphers giving them a most decided advantage—the totals at the close of the fifth innings showing them in the lead 12 to 2. In the sixth innings the Lees found a weak spot in the Morse nine and scored four unearned runs. The next three innings yielded them but four more runs, while the telegraphers in the same innings added nine runs to their score, winning the game by the totals 24 to 10.

"On the part of the Morse nine the pitching and catching of Blaney and Rankin were the features of the game. Culligan and Smith made a neat double play in the fifth innings. Graham, in the 1. f., did not have a chance for a fly during the game.

"Church, on the part of the Lees, excelled behind the bat, where he was placed about the fourth innings. The boys, highly delighted with their "tour" and its results, reached home safely at 1 A. M. this (Monday) morning.

The following is the score of the game :

MORSE.	O.	R.	R. E. LEE.	O.	R.					
Landy, s. s.	3	8	Church, s. s.	4	0					
Whitford, r. f.	4	2	Ott, 2d b.	5	0					
Rankin, c.	3	3	Kenley, 1st b.	2	1					
Graham, l. f.	3	3	Budd, 3d b.	3	2					
Blaney, p.	3	3	Meant, l. f.	3	2					
Smith, 2d.	1	2	Caillavet, p.	3	2					
Murphy, 1st.	5	1	Dejean, r. f.	2	2					
Culligan, 3d.	4	2	Wilson, c.	4	1					
Fisher, c. f.	1	5	Desportes, c. f.	1	0					
Total.	27	24		27	10					
Innings.	1	2	3	4	5	6	7	8	9	T
R. E. Lee.	0	1	0	1	0	4	2	0	2	10
Morse.	3	5	2	1	1	8	1	3	5	24
Home Run—Murphy, 1.										

The game with the "Nonpareils," of the *Price Current* office, which was to have taken place at the Lone Star Club festival on the 23d June, had to be postponed on account of the inclemency of the weather. The game and festival is announced to come off next Sunday, the 7th inst., at the Base Ball Park. The telegraphers having already achieved two victories in their contests with the *Press gangs*, feel confident of their ability of adding the third next Sunday.

The club will lose shortly the efficient services of their fine short stop, Wm. Landy, who leaves for New York about the 10th inst. ONE OF THE MORSE.

Personals.

Mr. NOAH JACOBS, an old California telegrapher, has just arrived at Sacramento, Cal., from the East, where he has resided for the past two years.

Mr. N. L. BOYDSTON has resigned his position in the Western Union Telegraph Company, at Sacramento, Cal., and accepted a position with the Atlantic and Pacific Telegraph Co.

Mr. P. HENRY, formerly of Truckee office, of the Central Pacific R. R., has accepted a position on the V. & T. R. R.

Mr. JAMES W. O'BRIEN is operator at Truckee, Cal., on the C. P. R. R.

Mr. E. M. RAILTON, train despatcher, and chief operator of the Western Pacific R. R., has just returned from "a run to the States."

Mr. J. MCCOLIFF, formerly of the Western Union office at New Haven, Conn., has been appointed Superintendent of Construction. Mr. MCC. is one of the oldest linemen in the country, and the managers and operators of twenty years ago will remember him.

Miss SADIE GORHAM, operator in the W. U. office at Mamareonek, N. Y., has just recovered from three weeks' illness and resumed her duties.

Mr. STEVE FIELDS, the genial and faithful station agent at Rye, N. Y., has taken charge of the Western Union office at that place, and Mr. P. KANE, baggage master, is to be operator for him.

Mr. E. H. COFFIN has resigned his situation as operator and ticket agent at Kansas City, on the Missouri Pacific R. R., and accepts a situation as general freight and ticket agent at the Kansas Central (narrow gauge) R. R. office at Leavenworth, Kansas.

Mr. E. G. THOMPSON, from the train despatcher's office at Sedalia, Mo., takes the office vacated by Mr. COFFIN, at Kansas City.

Miss MAGGIE C. PEACOCK takes charge of Pleasant Hill, Mo., office of the Missouri Pacific R. R. Miss PEACOCK is a graduate of Pleasant Hill office and not of a Kansas City Commercial College, as has been reported.

Mr. R. J. HEWITT, of Pleasant Hill, Mo., has been transferred to the train despatcher's office of the Missouri Pacific R. R. at Sedalia, Mo.

Mr. SAM. WOODWARD, day train despatcher on the Eastern Circuit of the Missouri Pacific R. R., resigns, and accepts a situation as superintendent of telegraph and chief train despatcher of the M. K. and T. Railway, with his office at Parsons, Kansas.

Mr. W. P. SLOCUMB, train despatcher on the Western Circuit of the Missouri Pacific R. R., takes the position resigned by Mr. WOODWARD.

Mr. KLUNK, night despatcher on the Eastern Circuit, takes the position vacated by Mr. SLOCUMB.

Mr. E. B. POPE, day operator on the Western Circuit of the Missouri Pacific R. R., takes the place vacated by Mr. KLUNK.

Mr. W. T. STONE has resigned from the Pacific and Atlantic New Orleans, La., office, and accepts a position in the Western Union office in that city.

Mr. CLARK retains his position as despatcher on the Western Circuit of the Missouri Pacific R. R.

Mr. WM. A. WHEAT, Jr., has accepted a position in the New Orleans, La., office of the Pacific and Atlantic Company.

Mr. GEORGE A. WEBSTER has accepted a position with the Pacific and Atlantic Co. at New Orleans, La.

Mr. JOHN SWINDEL has withdrawn his resignation from the service of the Western Union Co. and remains in the New Orleans, La., office.

The Telegraph.

A New and Superior Telegraph Line.

THE Northern Central Railway, under the direction of Supt. S. Cameron Wilson, have just completed a line of telegraph over the Baltimore and Potomac branch. The line is insulated with Brooks insulators, and is said to be the best working and most complete line ever seen in Washington. They use the Callaud battery for both main and locals.

Foreign Telegraphic Notes.

THE Australian Transcontinental Telegraph is now completed and working well from Port Darwin, south, to Daly Waters, a distance of 400 miles, and sixty miles more are poled. From Port Augusta, north, to Tenant's Creek, 1,176 miles, is completed, the wire working "splendidly." The unfinished gap is reduced to 250 miles; fine weather has set in, and a very strong force is on this portion of the line. Express horses are stationed along this gap, so that through express telegrams may be transmitted from each end every Tuesday, and, as soon as the gap is reduced to 100 miles, bi-weekly. The British Australian Telegraph Company announce that telegrams for Australia, Tasmania and New Zealand will be accepted for transmission on and after to-day (Saturday), at the office of the Falmouth, Gibraltar and Malta Company, and at all the postal telegraph stations throughout the United Kingdom. Such messages, however, will be taken only at the sender's risk until the land lines in Australia are finally completed.

The Anglo-American and French Atlantic Telegraph Companies announce the proposed payment of interim dividends for the quarter ending the 30th inst.

We hear that the Great Northern Telegraph Company are in treaty with the French Government for a concession to lay a submarine cable from Newcastle-upon-Tyne to the coast of France, by which that country will be placed in direct telegraphic connection with Russia and the eastern parts of Asia. M. Thiers has expressed himself as highly in favor of the project, and there is but one single paragraph, of a secondary character, the wording of which he wishes to see altered.

The Danish General Raasloff has gone to America to ask for a concession, in favor of the private Bank of Copenhagen, to land the proposed new submarine telegraph cable on the coast of the United States, and he has written home to say that the project has been favorably received at Washington, and the negotiations as good as concluded. This new line of communication between Europe and America will touch at the Faro Islands, Iceland and Greenland—all of which belong to the Crown of Denmark.

The directors of Hooper's Telegraph Works had announced an *ad interim* dividend at the rate of ten per cent. per annum, payable on the 1st July.

The total number of messages forwarded from Postal Telegraph Stations in Great Britain, during the week ending June 15, 1872, was 298,957—an increase over the corresponding week of last year of 73,759.

Telegraphic Brevities.

A SEVERE electric storm, without rain, at York, Maine, on Wednesday, July 3d, melted the telegraph wires for a long distance, and killed a little girl seven years old who was sitting beneath them, wounded her little brother, and left unharmed a third child, who was sitting between the other two.

The Western Union Telegraph Company transmitted, during the year 1871, 11,507,729 messages, the average price of which was 46.2 cents. Its lines are equipped with 6,892 Morse instruments and 15 Phelps printers. Of the Morse instruments 4,585 are sounders and 1,708 are registers; 158 sets of repeaters are also employed.

A splendid new switch has been placed in the Stamford, Conn., Western Union office, Mr. J. K. Butler, manager. This switch has 3,600 perforations, is composed of 8,000 pieces, and has already 60 connections in use. It is made for thirty wires. Five instruments are in use in the office in the depot, and three in the office at the village, a mile distant.

The California and Oregon Railroad Company have extended their track and lines some thirty miles beyond Red Bluff, and will soon be at Shasta. The Visalia branch is almost completed to Visalia.

The "Loop-test," for locating faults in telegraphic circuits, was invented by C. F. Varley.

New Patents.

For the week ending July 23, and bearing that date.

No. 128,500.—ELECTRO-MAGNETIC PASSENGER REGISTER, FOR STREET CARS. William H. Mumler, Boston, Mass.

1. In combination with a passenger vehicle I claim an electro-magnetic registering apparatus, substantially as described.
2. The combination, with a horse car or other passenger vehicle, of a battery and registering mechanism located thereon, having connecting wires leading from said battery and registering mechanism to the steps of the car, and a suitable circuit closer to be operated by said steps, substantially as described.
3. In combination with an electro-magnetic apparatus for registering the number of passengers that enter and leave a car or other vehicle, I claim the hinged step L, arranged and operating to break and close the circuit, substantially as described.
4. In an apparatus for registering by electro-magnetism the number of passengers that enter or leave a car or other vehicle, I claim a register box containing one or more magnets and one or more trains of mechanism, so arranged that the attraction of an armature by its magnet will cause a register wheel, provided with a consecutive series of numbers, painted or otherwise affixed thereon, to move around its axis, so as to present said numbers consecutively contiguous to a fixed indicator provided for the purpose, substantially as described.
5. In an electro-magnetic apparatus for registering the number of passengers that enter or leave a car or other vehicle I claim a circuit closer operated by the step of the car or vehicle, in combination with a means of closing the circuit of the bell ringing apparatus by the movement of the armature in the registering device, arranged and operating substantially as described.

Married.

ALLEN—CAMPBELL.—At Sacramento, Cal., June 12th, Mr. JOHN F. ALLEN, Manager of the Western Union Telegraph office at Sacramento, to Miss EMMA CAMPBELL, of that city.

COBELAND—ROSS.—At Brandon, Vermont, on Tuesday evening, July 9th, 1872, at the Congregational Church, ITAMAR W. COBELAND, of Fishkill, N. Y., Superintendent of the Dutchess County Telegraph Company, to Miss MARY J. ROSS, of Brandon.

Died.

BISHOP.—At his residence in this city, at 7 P. M. on Thursday, July 4, Mr. SAMUEL C. BISHOP, in the sixty-second year of his age. His remains were taken to Boston, Mass., and interred at Mount Auburn on Tuesday last.

Obituary.

SAMUEL C. BISHOP.

It is with no ordinary feeling of sorrow that we announce the death of Samuel C. Bishop, late proprietor of the Bishop Gutta Percha Works, who died in this city on the evening of the Fourth of July last. Mr. Bishop has for many years been well known to the telegraphic fraternity as the manufacturer of submarine telegraph cables and insulated wires, for electrical and telegraphic purposes.

He was in ordinary health up to within a few days of his death, when he was somewhat prostrated by the excessive heat, and remained at home as a precautionary measure, but was not considered seriously indisposed until the day of his decease. His remains were taken to Boston, Mass., and now rest in the beautiful cemetery of Mount Auburn, where they were deposited on Tuesday last. He leaves a wife, but no children, to mourn his death.

The deceased was born in New England, where his early years were passed, and if he had lived until October next, would have been sixty-two years old. He was of a progressive turn of mind, and when India rubber was first brought into notice as an article of commerce and utility, was much interested in its development, and was engaged in some of the earliest experiments and attempts to utilize it. He has been connected with gutta percha manufacturing from its earliest introduction in this country, in 1848. Recognizing its value as an insulating substance, in 1851 he commenced the insulation of telegraph wires by the use of gutta percha. The enterprise was an entirely novel one, and the machinery and appliances for the purpose had all to be devised and invented, requiring much time, labor and capital. In 1862 the Bishop Gutta Percha Company was organized—of which Mr. Bishop was always the manager—and about three years ago the business reverted to him, and has since been conducted by him individually until his death. The cables and insulated wires made by him were of a superior character, and nothing better of the kind have been produced elsewhere. It was his ambition to manufacture and lay a regular ocean telegraph cable, believing that he could produce a better cable, and lay it as successfully as English manufacturers; but in this he was never gratified, as the English cable works have succeeded in retaining a monopoly of the ocean cable business to the present time.

Mr. Bishop was peculiarly successful, and had built up a valuable business, which he has carried on of late years at the gutta percha works in East Twenty-fifth street, in this city.

Mr. Bishop was exemplary in all the relations of life—a kind husband, a warm and faithful friend, a liberal and kind hearted employer, and a strictly honest business man. A man of strong will and marked character, he despised or hated with characteristic energy and vigor anything that savored of vacillation or chicanery. For a friend he had always kind words and a helping hand. He was naturally of an unostentatious, open, and very generous disposition, and he was never appealed to in vain for aid to any worthy or deserving person or object.

He was much beloved by all of his employees, most of whom have been with him for many years, and towards whom he always cherished an almost fatherly interest. About six years ago he voluntarily introduced in his works the eight hour system, and they have been conducted on this principle ever since. Whenever his employees were sick or in trouble he was their ever constant, kind and reliable friend. They were never left to struggle on unaided because they had no legal claim upon him. He regarded employer and employee as members of a common brotherhood, bound to each other by something more than the mere rendition of service and payment of the stipulated price therefor. When the fact was made known to them that they would never more see their friend and employer in life, each felt that a personal affliction had befallen him, and they mourned as for a near and dear relative.

To the many friends of Mr. Bishop here and throughout the country the news of his decease brings universal sorrow. They loved him for his many excellent, kindly qualities, and respected him for his integrity and business ability.

To THE TELEGRAPHER and its editor and publisher his death is a severe loss. From the first number of the paper he has been its earnest friend and liberal supporter. His advertisement appeared in the second number of the paper (no advertisements were printed in the first number), and has never been absent from its columns since. He was our warm personal friend, and in all our relations with him we have found him kind, liberal and just.

He has gone from among us, however, and loving words and tears cannot call him back. He is at rest, as we all shall be, sooner or later. Earth's cares and pleasures trouble and interrupt him no more. We can but render this last tribute to his memory; and as we turn from his silent tomb, hope that when our turn may come we may be as sincerely mourned, and have as little to regret as he who has preceded us.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, JULY 13, 1872.

Automatic Telegraphy.

OUR esteemed friend, Mr. D. H. CRAIG, seems inclined to take exception to our remarks, heretofore made in THE TELEGRAPHER, in regard to automatic telegraphy, and intimates, in a communication which we publish this week, that we give it but "faint praise." It is our intention and desire to give to automatic telegraphy full justice, and to accord to it and its development all that it can justly claim. In our paper of June 15th we stated our position in regard to all electrical and telegraphic improvements, which is "to prove all things, and hold fast to that which is good." As fast as Mr. CRAIG or his associates in the Automatic Telegraph Company shall demonstrate, in practical operation, the correctness of their claims and ideas, they shall have due credit in the columns of THE TELEGRAPHER, whether the results of their demonstrations agree or disagree with any previous theories or ideas of our own or other people.

There is no doubt but that Mr. LITTLE and the Automatic Telegraph Company have accomplished far more than has previously been accomplished in this country or Europe in this matter of automatic telegraphy. The successful recording of the signals, when so rapidly transmitted, is undoubtedly a very essential and material advance over the Wheatstone and other systems. The difficulty of recording signals at the rate of even one hundred per minute has heretofore greatly retarded the adoption of the automatic system. This difficulty we concede has been overcome by Mr. LITTLE. We have seen specimens of recorded signals transmitted with great rapidity between Washington and this city, and the record was perfectly and beautifully clear and distinct.

We have not heretofore regarded the automatic system as likely to prove practically so advantageous at way stations as on through circuits, but on this point we are willing to be convinced. It only needs that a line with say, fifteen or twenty offices on a circuit of 250 to 300 miles, shall be fully equipped with automatic machinery and operators to demonstrate what can be done with it under such conditions.

Although much time has been consumed by the Automatic Company and its predecessors in developing the system, yet the time is not unusually long, in view of the fact that not only had the operators, copyists, etc., to be taught, but much of the necessary machinery had to be devised. It is not improbable but that there will be found even more of this work to be yet done. If there should, it would not be cause for discouragement. It is only slowly, and by experience and much labor that these things can be brought to perfection. There is no "short cut" to success in such matters, although three years ago Mr. CRAIG and his then associates thought that they had found one. Their experience since has doubtless very fully disabused their minds in this respect.

We do not wish to be considered as by any means arguing *against* automatic telegraphy. On the contrary, we are in favor of and hope for its success. All telegraphic progress is to us welcome and gratifying. Believing the telegraph to be one of the agents of civilization, we desire to see it brought into universal use, and whatever may tend to bring it more generally into public service should be encouraged and commended. That it will ultimately add largely to telegraph facilities we have no doubt—that it will accomplish all that enthusiasts like Mr. CRAIG claims for it we are not prepared to admit; but, as we have before said, we are open to conviction, and willing to be convinced.

If we accept Mr. CRAIG's figures we are fearful that some of the employes will find it difficult to make both ends meet financially on the salaries he assigns them. Intelligence, aptness, and rapidity of eye and hand will

be required to enable the composers and copyists to do good, reliable and *quick* work, even with the best machines. We doubt his finding these to any considerable extent at the rate of compensation he mentions. A correspondent in the present number of THE TELEGRAPHER seems inclined to poke a little fun at him in regard to his favorite "ten year old child," who is supposed to be capable of working the composing machines with great rapidity. We have seen a good many smart children of about that age, but none that we would like to entrust with telegraphic manipulation. We are inclined to think that Mr. CRAIG will have to give up that child, and he need not experience very great astonishment if many of his "low salaried ladies" are compelled to follow the child into obscurity.

The discussion of this matter in the columns of THE TELEGRAPHER is awakening a very general interest in the subject, and we are pleased to note the spirit of inquiry and investigation manifested. Let us hear from all who desire information or explanation, or who have anything of interest to say for or against the automatic telegraph system. It is a subject of prime importance, not only to the public who use the telegraph but to all who are in any way interested in its management or administration.

James Partrick, successor to Chester, Partrick & Co., of Philadelphia.

THE well known firm of CHESTER, PARTRICK & Co., of Philadelphia, has been dissolved, and Mr. JAMES PARTRICK succeeds to and will hereafter conduct the business at the old stand, No. 38 South Fourth street. Mr. PARTRICK is a practical telegrapher, an energetic business man, and progressive in his ideas; and under his sole management there can be no doubt but that the business will be conducted in such a manner as to insure prosperity and afford satisfaction to old and new customers.

We trust that those who have occasion to avail themselves of the facilities offered will generously remember him in the bestowal of their patronage. We are certain that nothing will be left undone to merit a liberal patronage; and, if his success is commensurate with his deserts, nothing better could be desired.

The old time telegraphers will remember Mr. PARTRICK as one of themselves, and he is assured of their influence in his favor. His establishment is amply equipped with machinery, and possesses facilities for doing any kind or amount of electrical and telegraphic work that may be required, and the constant personal supervision of the proprietor will be given to the business in all its branches.

The American Artisan Enlarged and Improved.

The *American Artisan*, with the new volume, which commenced with July 6th, comes to us enlarged to the size of the *Scientific American*, and very much improved. Its present size gives better opportunity for illustration, and the additional room enables it to give a greater variety to its contents. Under the management of Messrs. BROWN and ALLEN, the present proprietors and publishers, the paper is energetically conducted, and will be found of even greater value and interest than heretofore. The success which has attended the publication of this paper, and the liberal patronage which it receives from those interested in mechanical pursuits, is well deserved, and will, without doubt, be largely increased under the new administration and auspices.

It will hereafter be issued on Saturday, instead of Wednesday of each week, as heretofore.

Mr. J. D. Reid Gone to Europe.

ON Saturday last Mr. JAMES D. REID sailed on the steamer Baltic from this port for Europe, to be absent three months. During his absence he will visit the principal places of interest in Europe, and we hope that he will find this foreign trip, which he has long desired to take, pleasant and satisfactory. He has the best wishes of his numerous telegraphic friends for a pleasant journey and a safe return.

If a thermo-battery had been placed on the roof of a building in New York during the past week no doubt the currents emanating therefrom would have been intense and powerful.

Australian Telegraphs.

THE Prime Minister of Queensland, Mr. Palmer, proceeded to Sydney in March last, with the view of obtaining the cooperation of New South Wales and of Victoria in guaranteeing a line of submarine telegraph between Queensland and Java. The Agent-General for Queensland in this country has received news by telegraph of Mr. Palmer's return to Brisbane, and of his having moved a resolution in the Legislative Assembly, which was favorably received, authorizing the Government to guarantee interest on the cost of a submarine line between the terminus of the land lines in Queensland, at the head of the Gulf of Carpentaria, and Java. Acting under instructions, he was enabled to send out, by the outgoing mail of the 17th inst., more than one proposal to carry out the Queensland and Java line within one year, upon the basis of a guarantee. These proposals were accompanied with assurances that the line would be extended to Singapore and Rangoon—thus affording a duplicate communication between India and Australia. It is supposed that it was the desire to obtain the duplicate line as a security against the communication being cut off by a temporary failure of the existing submarine line between Madras and the northwest coast of Australia, which partly influenced the three colonies in question in giving the guarantee. The existing Dutch lines in Java and Sumatra already extend to within a short distance of Singapore, and the laying of the proposed cable to Java would immediately lead to a duplication of the line between Singapore and the Australian Colonies. The Australian Colonies have been the last important communities to become connected by telegraph with the outer world, principally in consequence of the jealousies which exist among them. Some of them have now determined to cooperate, and to establish a reliable system of international telegraphic communication. The South Australian land line between Adelaide and Port Darwin is not yet completed, about 180 miles remaining unfinished. It seems a natural division that one cable should land on the northwest coast and another at the head of the Gulf of Carpentaria, in Queensland. They each accommodate different interests, and are both required as a security against interruption.—*The Mechanics' Magazine*.

Miscellaneous.

SECONDARY BATTERIES.—It is well known how the Leyden jar discharges, in one strong spark, the sum of electricity it receives from the electric machine. M. Panté connects a somewhat analogous apparatus with the voltaic pile. Two plates of lead (20 in. long by 8 in. wide) are rolled up in spiral, being separated from each other by a few strips of India rubber. This spiral is put in a jar containing acidulated water, and having a gutta percha cover, on which are fitted binding screws connected with the plates. Twenty such elements are placed in two rows of ten each, and charged from the primary battery, which consists of two Bunsen couples. By means of a commutator of peculiar construction these secondary elements may be connected, either for quantity or for intensity. When the elements are joined in series an electro-motive force equal to thirty Bunsens is obtained, giving a current by means of which platinum wire may be fused.

In the secondary couples the chemical action generating the current is the reaction of hydrogen or peroxide of lead, the current from the primary pile having caused decomposition of the water, oxidizing one of the plates and developing hydrogen on the other.

By the above arrangement the quantity of electric work from the direct action of the primary pile is transformed by condensation. This case is somewhat similar to that of a hydraulic press or crane. In a pile driver, e. g., a heavy body, raised by degrees to a great height by a series of successive efforts, is then left to itself, and gives back at once the greater part of the work thus expended on it; so when, after charging, the secondary circuit is closed, the sum of the accumulated chemical actions caused by the primary current is given out in the form of a very intense current of short duration. The effect, when the couples are joined for quantity, corresponds to the fall of a very heavy mass raised a small height; when joined for intensity, to the fall of a small mass raised to a great height. It is not difficult to see how these secondary piles may become of important use.

A Lecture on Thomson's Galvanometer.

DELIVERED TO A SINGLE PUPIL IN AN ALCOVE WITH DRAWN CURTAINS.

The lamplight falls on blackened walls
And streams through narrow perforations;
The long beam trails o'er pasteboard scales
With slow decaying oscillations.
Flow, current! flow! set the quick light spot flying!
Flow, current! answer, light spot! flashing, quivering, dying.
O look! how queer! how thin and clear,
And thinner, clearer, sharper growing,
This gliding fire, with central wire
The fine degrees distinctly showing.
Swing, magnet! swing! advancing and receding;
Swing, magnet! answer, dearest, what's your final reading?
O love! you fall to read the scale
Correct to tenths of a division;
To mirror heaven those eyes were given,
And not for methods of precision.
Break, contact! break! set the free light spot flying!
Break, contact! rest thee, magnet! swinging, creeping, dying.
d p
—in Nature,
d h

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Are secured by the use of our Improved

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ANDERS & CO.'S MAGNETO-DIAL TELEGRAPH INSTRUMENTS,

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A new combination, with Key on same base with the Bell, or otherwise, as may be required. Made under the patent of F. L. POPE.

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USED BY THE

TELEGRAPHS OF THE UNITED STATES

DURING THE YEAR 1871.

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The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

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This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

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Cincinnati, Ohio,
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Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
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Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
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Rochester, N. Y.,
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Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.**Second**—The Automatic Signal Boxes.**Third**—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.**Fourth**—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

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AND THE

PRESSthroughout the **UNITED STATES** and **CANADA.****NO EFFORT, TROUBLE OR EXPENSE**is spared by the Proprietors to obtain and secure **ANY POSSIBLE IMPROVEMENT** which shall increase the**EFFICIENCY,****RELIABILITY** and**ECONOMY**

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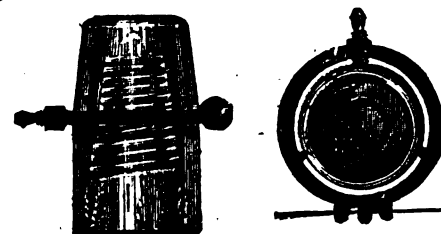
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The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

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As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

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5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

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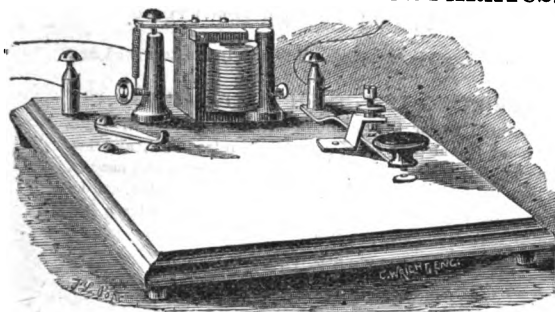
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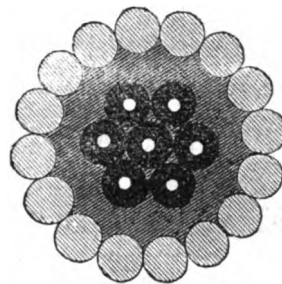
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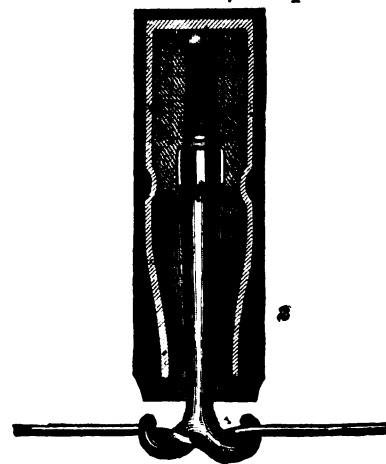
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The Telegrapher

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Original Articles.

Gauguin's Conical Multiplier and its Uses.

BY DAVID BROOKS.

(Concluded.)

As STATED at the beginning of this article, Blavier demonstrated mathematically that the forces of the current are proportionate to the tangents of the angles of deflection in Gauguin's instrument. This may be experimentally demonstrated in the following manner:

Suppose that with the 21 Callaud cells we get a deflection of 50° , and that we have previously ascertained that the total resistance in the circuit is 117 units—the resistance of the battery being 115 units, and that of the galvanometer and connections 2 units—if we double the original resistance by inserting 117 units more, the deflection will fall to a fraction below 31° . Now the tangent of 50° is 1.192, half of which is 0.596. The degree in the table corresponding to this latter tangent is 30.8° .

Again, three times the original resistance (117 units) is 351. If we increase the total resistance in circuit to this amount by adding 234 units to the resistance of the battery, galvanometer and connections, we get a deflection of a little less than 22° , and corresponding to the tangent of 397, which is one third the tangent of the original deflection.

Again, suppose we make the resistance in the circuit ten times the original resistance, which would be 1170 units—the resistance required to be inserted being 1053 units in addition to that of the battery, galvanometer and connections—we find that the deflection is a little less than 7° , or more accurately 6.8° , the tangent of which is one tenth of the tangent of 50° .

In this manner it may be experimentally demonstrated that, by whatever ratio we increase the total resistance in the circuit, by that same ratio we reduce the tangent of the angle of deflection, and, consequently, that the tangents of the angles are proportional to the strength of the current.

The most convenient portion of the scale is between 10° and 50° , because that above the latter point an increase in the strength of the current does not affect the needle proportionately. In determining the resistance of a Grove or bi-chromate battery, which is usually considerably less than that of a Daniell or Callaud, it is most convenient to use but one coil of the coarser wire of the galvanometer, and both coils, or more convolutions, as the resistance of the battery is greater. When the resistance is as great as ten units per cell it is advisable to use both coils of the finer wire.

Electro-motive Force.—Every battery has a certain strength, or produces a certain effect, termed electro-motive force. This is in no wise affected by the size or form of the battery plates, but depends solely upon the nature of the chemical action between the plates and the exciting solution. In whatever manner this force is exhibited it is in all cases reduced in proportion to the resistance of the circuit. If we connect this instrument in circuit with a battery, and obtain a certain result or deflection, we are certain that this deflection has been reduced in proportion to the sum of the resistances in circuit. Therefore, if we multiply the tangent of the deflection by the resistance of the circuit, the product is the normal strength or electro-motive force of the battery.

Comparing the products thus obtained, by inserting in the circuit different kinds of batteries, we obtain their relative electro-motive forces.

If the number of cells in the different batteries are unequal, the products must be divided by the number of cells in each case.

For example: 21 cells of Callaud, having a total resistance of 119 units in circuit, show a deflection of 50° , tangent 1.192. Tangent 1.192 multiplied by 117, gives 139.464. Dividing by number of cells, 21, gives a quotient of 6.63, which is the normal strength, or electro-motive force per cell.

Another example: a bi-chromatic battery of 40 cells, with a resistance of 195 units, gives a deflection of 70° , tangent 2.747.

Required—the electro-motive force per cell, as compared to the Callaud. $2.747 \times 195 = 535.665 \div 40$ (number of cells) = 13.39, the electro-motive force of the bi-chromatic cell.

Again: a Grove battery of 35 cells is placed in circuit

with the galvanometer, the total resistance being 63 units, giving a deflection of 81° , tangent 6.314. $6.314 \times 63 = 397.782 \div 35$ (number of cells) = 11.36 as the electro-motive force of the Grove cell. If we take the electro-motive force of the Callaud as unity, the three batteries stand relatively as follows:

Callaud.....	1.00
Bi-chromate.....	2.02
Grove.....	1.71

Constancy.—As has been previously stated, the electro-motive force of a battery is greatest when first set, and falls steadily as the battery is used, but much more rapidly with some kinds than with others. The force also decreases much more rapidly when the resistance in the circuit is inconsiderable, or in proportion as the resistance is reduced.

As an example, the Callaud battery of 21 cells, previously referred to, when first set, had a resistance of 2310 units, or about 110 units per cell. It gave a deflection of 3.5° , tangent 0.0612. This tangent multiplied by the resistance, 2310, gives, as electro-motive force, 141.37, and this quotient divided by 21, the number of cells, gives 6.73 as the electro-motive force per cell. After three months' use the resistance had fallen to 115 units, or 5.47 units per cell, and its electro-motive force, as above stated, to 6.63. Deducting this from its initial strength, 6.73, we have 0.10 as the loss in strength or electro-motive force. Dividing 0.10 by 6.73 we have the percentage of loss, viz., .014, or a little more than one per cent. in three months. This battery is only used occasionally for testing purposes. If it had been worked steadily its loss in electro-motive force would have been greater. A Grove or bi-chromate battery would have required renewal many times during this period.

Constancy in a battery is a very important consideration. A Grove or bi-chromate loses its power very rapidly. When connected in a local circuit with an ordinary sander, the armature of which is adjusted for its initial strength, the latter will fall so rapidly in the course of an hour that the tension of the adjusting spring will need to be reduced to enable the armature to work freely. When used as a main battery all the relays in the circuit will require adjustment within a few hours, owing to the same cause.

This consideration also enters largely into the question of economy of maintenance. From what has been said it will be seen that the work performed is the result of two conditions, viz., the electro-motive force and the resistance.

Some years since an instrument called a *magnetometer* was invented for testing the strength of batteries. It was, however, in reality, rather a test of their resistances than of their actual strength, and to be governed by its indications would necessarily lead to error. It was formerly considered that if a battery gave a bright spark when its poles were connected, that it was a sufficient indication of its strength—which is, to a certain extent, true. Under those conditions, however, two large bi-chromate cells will make more of a flame than 50 Callaud cells, while at the same time the latter will work a line of 100 miles with 10 relays in the circuit, whereas the two bi-chromate cells would be entirely inadequate for that service.

It has been stated that a single cell, constructed of an ordinary gun cap, has been experimentally used to transmit a despatch through the Atlantic cable. As compared to an ordinary cell it would increase the resistance of the circuit perhaps two or three thousand units, and increase the apparent length of the cable a thousand miles. The size of the cell, however, has no effect whatever upon its electro-motive force. If a cell as large as the earth were used in place of an ordinary one in the same experiment, the increase in the strength of the current would be scarcely appreciable. The resistance of the cell would be reduced to 0 and would lessen the total resistance not more than three or four units in 10,000.

It is not the object of the present article to go into the subject of batteries any farther than is necessary to explain the uses of a very valuable instrument, and one which is indispensable to the experimenter, for the proper investigation of questions relating to batteries.

When the writer was in Europe it was frequently suggested to him that our knowledge, in this country of batteries and their uses, must be exceedingly limited, otherwise we would never consent to use the Grove

and bi-chromate for telegraphic purposes, they being so ill adapted for this service in comparison with other forms. Their inconstancy renders them unsuited for the work of a telegraph line, to say nothing of their inconvenience and expense. This criticism, however, is no longer applicable, as the past two years have witnessed a great change in opinion in respect to the advantages of different batteries.

The New Loan of the Western Union Telegraph Company.

THIS is the most important telegraph company in the United States. It has in operation no fewer than 60,502 miles of line, comprising 133,890 miles of wire, which is about 40,000 miles in excess of the network administered by the post-office department in this country. and last year it realized a net income of £539,563. The directors, thinking that their present offices in New York were not on a scale commensurate with the extent and grandeur of the undertaking, and the magnificence of their income, propose to erect a large and commodious edifice, at the cost of \$1,500,000, which they propose to raise by the issue of 1,500 bonds of \$1,000 each, to be placed at 92, or about £207 per bond. As a special security, over and above the general resources of the company, they offer to the bondholders a first mortgage on this property. As interest, however, is to be paid from the 1st of May last, the cost of each bond may be said to be reduced to £203 2s. 6d., on which amount the holders will receive 7 per cent. until such time as the bonds are redeemed at 10 premium, for which purpose \$30,000 are to be yearly set aside to form a sinking fund, which is to be in the hands of the Union Trust Company of New York. This fund is to continue in operation until the remnant of the outstanding bonds is reduced to \$1,000,000, which will be paid off on the 1st of May, 1902, at \$1,000 in gold for each bond. As Hope remained in the bottom of Pandora's box, so the holders of these securities, not amortised by the sinking fund, have before them prospects which render their position fully as advantageous as those whose bonds may be cancelled in the first year, for they are to have the option, at any time before their bonds arrive at maturity, to have them converted at par into the share stock of the company, and they will thus be entitled to share in all the profits which may be realised should the United States Government, following the example set by our own Government, purchase the telegraphs of the United States. In this case a very considerable benefit will accrue to the shareholders of telegraph companies in America. On the discussion of the English telegraphs the Government purchased the property of the Electric and International Telegraph Company, at a price which yielded the holder of every £100 stock £257 11s. 3d. Should the subscribers to these bonds at 92 be equally fortunate, they may receive, in addition to the 7 per cent. interest, a premium of £157 11s. 3d. on the surrender of their investment. The bonds have been dealt in at 1½ to 2 prem.—*The Railway News.*

A Train Telegraph.

THE Lawrence *Republican Journal* describes a new and apparently valuable device, for signalling or communicating with the engineer of a long train from any car in it. Many accidents have occurred from trains breaking apart, the engineer not being notified of the fact. There has long been needed some connection throughout the train more effective than the old-fashioned bell rope, which, though perhaps sufficient for passenger trains, is not applicable to freight. Maj. V. B. Bell, of the L. L. and Galveston R. R. Co., has brought out an invention especially adapted to freight trains, which promises to secure the desired end. It is simply a train telegraph. In one corner of the caboose is a battery, differing from common telegraph batteries in being constructed of leather and copper, and being closely boxed, connecting with an alarm in a small box on the side of the caboose and with another on the engine; wires run beneath all the cars, and the connection is established between the cars by flexible copper wires, covered, which can be detached, being held in their places by any single spring catch—the common spring clothes-pin being used at present.

When the train breaks these cords are unfastened, the connection is broken, the alarm is sounded in the caboose, and the engine and the train is stopped. This is the principal object of the invention; but by means of it the conductor can, by simply moving the key of the alarm box, signal the engineer to back, go ahead, etc. A thorough test of it was recently made by practical railway operatives and managers, and the results are pronounced satisfactory. Though the machinery was necessarily imperfect—being all new and untried—the inventor was able to answer all objections and explain how all proposed difficulties may be easily surmounted. The apparatus will cost about \$75, and if practicable, will effect a large saving to railways.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

The Student Question.

TO THE EDITOR OF THE TELEGRAPHIC.

I HAVE read with much interest the various communications which have appeared in THE TELEGRAPHIC upon the student question, and it seems to me that your correspondents generally consider the subject from the standpoint of their individual interests and prejudices rather than from a proper understanding and appreciation of the general principles that underlie and control it.

In the first place we may dismiss as utterly unworthy of consideration the communications which denounce all teaching of additional operators as inimical to the interests of those who have already become professors and practitioners of the telegraphic art. It is just about as impossible to carry out the views of these persons as it is to permanently dam up running water, or to prevent the wind from blowing. Students will learn, in spite of all attempts to prevent them, and the necessities of telegraph companies compel them to secure additions to the telegraphic force. Besides this, there will be constantly entering the ranks those whose positions in telegraph offices as clerks, etc., give them access to the instruments, and those who are more or less thoroughly taught through the friendship of operators, or for the purpose of aiding and relieving them in the discharge of their duties in offices where only one or two regular operators are employed.

It seems to me that the difficulty complained of is not so much that too many operators are taught, but that they are not properly qualified for the business, or insufficiently educated professionally.

Will any of your anti-student correspondents inform me when there has ever been an over supply of properly qualified first class operators? Is it not a fact, patent to every telegraph manager, that it is at this time a very difficult matter to fill situations that require really good talent and telegraphic proficiency? Could any of these gentlemen who so violently denounce the student business to-day find a dozen telegraph operators unemployed, were they required to equip a line which must have first class talent in the performance of its business?

No, the difficulty is not in the number educated. It may be that there are too many of a low grade of education, professional and otherwise, but "higher up" there is always room. And in this the telegraphic does not differ from any other profession which requires education and special training on the part of those engaged therein. Of lawyers, doctors, etc., it may be said that in the lower ranks there is always an over supply, but of those who are entitled to rank as first class there is never any surplus.

It would seem ungracious in me to indicate the difficulties in this matter without suggesting a remedy. The remedy must be found not in a foolishly attempted ostracism of all telegraphic students, but in the elevation of the standard of education of such students, and in properly qualifying them for the business in which they desire to engage. This should be supplemented by a proper classification of telegraphic situations, duties and compensations, and the establishment of a system of promotion and advancement for merit and devotion to the interests of employers.

These reforms cannot be effected at once, and they must be the result of combined action on the part of telegraph employers and employees. Until this can in some way be effected I do not see just how the desires of your correspondents can be gratified. R.

A Paraguayan Telegraphic Bull and its Consequences.

LONDON, ENGLAND, July 1.

TO THE EDITOR OF THE TELEGRAPHIC.

A CONSTANT reader of your valuable paper, I have been very much pleased with your "Humors of the Telegraph," and I have been induced thereby to write out for publication in your columns an incident which happened in the Paraguayan telegraph service, with which I was formerly connected.

During the dreadful war which was waged between Brazil and her allies and the Dictator Lopez, of Paraguay, I was Director of the Government Telegraphs of the Republic of Paraguay. Your readers will doubt-

less recollect that the Government of Lopez was excessively despotic—the property and lives of the people being at the absolute disposal of the Dictator. So perfect and absolute was this despotism that any order, or the mere expression of a wish of Lopez or his chiefs, was an unchangeable law, and an indication of hesitation in carrying it out was a sure condemnation to torture, and not unfrequently to death.

During the war the telegraph was very actively employed, and Government orders were constantly being transmitted to all parts of the country by the wires. It happened at a certain time during the war that a heavy gun, weighing some fifteen tons, was cast at the foundry at the mines of Ibierry, and had to be transported by bullocks over a long distance to the nearest shipping port, Asuncion. Some of the small bridges along the road were not in a state to insure safety under such an exceptional weight, and the Mayor of Asuncion, with the intention of repairing and strengthening some of these bridges, sent an order by telegraph to the Chief of the District of Ipané to send to him at Asuncion, within three days, five or six recruits, without stating what they were wanted for. As in Paraguay during the war everybody was under obligation to render military service, all those not under arms were called recruits, and as such had to render any kind of service for the War Department required of them, and so it was considered unnecessary, in issuing such orders, to vouchsafe any explanation.

The unfortunate telegraph operator, on receiving the order and writing it out in the Spanish language, made a serious blunder, and wrote the number of men required (cinco o seis recrutor) in ciphers, instead of writing it out in full, so that as written it looked like 506 recruits ("o" signifying in Spanish the same as "or" in English). The poor Chief of the District of Ipané was greatly terrified at receiving such an order—his district having already been stripped of nearly all able bodied inhabitants by the demands of the military service. However, it was, he thought, useless to question such an order from his superior; to hear was to obey (unless obedience were physically impossible), or take the consequences, which, as before indicated, were likely to be not only dangerous but fatal. He accordingly, with the help of the Judge, Priest, Sergeant and Corporal of the District, went to work energetically, to start for Asuncion every male inhabitant between eight and eighty years of age.

Three days afterwards a long procession of most miserable looking wretches, old men and children, stumbled along the streets of Asuncion, sorrowing at their sad fate at being compelled to go into a service from which they could have but faint hopes of ever returning to their homes and families. At the head of this motley procession the Chief rode on horseback, and presented himself to the Mayor, trembling and full of trouble and apprehension, and most submissively asked his pardon for failure to fully comply with his telegraphic order and present the required 506 recruits, as in his whole district there remained only 352 male inhabitants, all of whom he had with him!

The explanation which followed greatly relieved not only the Chief but his motley followers, who returned to their homes rejoiced that, for the time at least, they were spared. That telegrapher was more careful in the future, you may be sure.

R. VON FISCHER GREENFELD.

A Telegraphic Reunion.

AUBURN, N. Y., July 13.

TO THE EDITOR OF THE TELEGRAPHIC.

THE annual reunion of the telegraphic fraternity employed in the Western Union service in this section of the State, which took place at Syracuse, was a very successful and enjoyable affair. The inability of the editors of THE TELEGRAPHIC to be present and participate with us in the festivities of the occasion was very much regretted.

There were present some forty of the fraternity from Corning, Elmira, Owego, Binghamton, Newburgh, New York, Rome, Fayetteville, Auburn and Rochester. The gathering was not a formal but social one, and every person present seemed disposed to make the best possible use of the opportunity afforded for mutual pleasure and enjoyment. Superintendent Gifford, Manager Pike, and the employees generally in the Syracuse office of the Western Union Company, were unremitting in their efforts to entertain the visitors from other places, and were eminently successful in so doing. They may rely upon it, that whenever the opportunity offers to reciprocate their attentions and courtesies, it will not be neglected.

The out of town delegations arrived at an early hour, and were warmly received by the officials and operators in the Western Union office at Syracuse, who had everything prepared for their reception.

The first thing upon the programme was a sail upon the lake, which was greatly enjoyed. After this was over the party proceeded to the Globe hotel, where an elegant banquet had been prepared, to which they were heartily welcomed and did full justice. Supt. Gifford took the head of the table, and the resident telegraphers saw to it that their guests were well cared for.

At the conclusion of the feast all present were seated in carriages, which had been provided for the occasion, and were driven through the principal streets of the city to the grounds of the University, where they accepted an invitation from A. C. Yates, Esq., to visit Renwick Castle.

The day was fully occupied in doing the city, and in the evening the visitors left for their homes delighted with their experience, and with an exceedingly pleasant recollection of the fraternal kindness and courtesy of their entertainers.

In the afternoon greetings were sent by telegraph to President Orton, Gen. Supt. Eckert, Supt. Holmes and ex-Supt. L. G. Tillotson. President Orton responded by telegraph to the message sent him by Supt. Gifford, on behalf of those present, as follows:

"I received your message early this morning. Please convey to the operators of the Central and Erie Districts my thanks for their cordial greeting, and my best wishes for their continued prosperity."

"The success of the Western Union is largely due to the cordial support given to the Executive Department by the Superintendents and operators. The strongest element of our monopoly is having the best men. (Sig.) WM. ORTON."

As many of the readers of THE TELEGRAPHIC are aware, it has been, for several years past, customary for the telegraphers on the New York Central and Erie Railroads to devote the Fourth of July to these fraternal gatherings. The one which has just occurred was the best and most enjoyable one that has yet taken place. Everything passed off in the happiest manner—nothing occurring to mar the festivities in the slightest degree.

The telegraphers are under much obligation to the railroad officials who, in the kindest manner, gave passes to all who could arrange to be present.

When the next annual gathering takes place we hope to see with us representatives of the telegraphic press of the country, who may be sure of a cordial greeting and hearty welcome. TOM.

The New Orleans Morse Base Ballists still Triumphant.

NEW ORLEANS, July 9.

TO THE EDITOR OF THE TELEGRAPHIC.

AFTER two postponements, necessitated by bad weather, the "Lone Star" festival took place at the Park on Sunday last. The day was exceedingly pleasant, and the previously arranged programme was fully carried out, and resulted in its being one of the most interesting open air entertainments presented this season.

The first event was a base ball contest between the Morse and Nonpareil clubs, which resulted in an easy victory for the telegraphic artists of the Morse club.

The following account of the affair is from the *New Orleans Times* of the next day:

"Play was opened at 9.45 with the Morse players at the bat, and Mr. Alf. Baker, of the Stars, as umpire, the first inning yielding three runs for the Morse and two for their opponents, and as the second inning resulted in a blunder for both sides, a close and interesting contest was promised, but the third inning dispelled the illusion, when the telegraphers, getting in on a batting streak, rolled up eight runs before they could be retired, and disposing of the Nonpareils without scoring. The close of the third inning saw them in the lead by a count of eleven to two, and the game safe in their hands. Although the newspaper men made a slight rally on the fourth inning, getting in five runs, the lead thus obtained was steadily increased, and the telegraphers playing steadily, came in at the finish easy victors by the one sided score of 27 to 12.

"Rankin and Blaney, respectively catcher and pitcher of the Morse nine, are a strong team, and showed such play together as warrants a prediction that with a little more practice they will teach even the veterans 'how to do it.' A reference to their fielding record will show how creditable was their display—the first named retiring seven victims, taking two fly tips and assisting six times. The club has some good material, and bids fair to make its mark ere long—their record up to this date showing six victories and not a single defeat. Subjoined is the score:

MORSE.			NONPAREIL.		
	O.	R.		O.	R.
Rankin, c.....	7	3	Massey, c.....	2	2
Blaney, p.....	1	4	Lawrence, 3d.....	1	1
Landy, s.....	1	2	Paap, s.....	4	2
Fisher, r. f.....	0	2	Barrett, 1st.....	7	1
Culligan, 3d.....	3	2	Clancy, c.....	3	1
Murphy, c. f.....	0	3	Waters, p.....	1	1
Graham, l. f.....	1	4	Hart, r. f.....	0	2
Smith, 2d.....	9	2	Miller, l. f.....	5	2
Johnston, 1st.....	5	5	Norris, 2d.....	4	0
Total.....	27	27		27	12

Innings.....	1	2	3	4	5	6	7	8	9	T
Morse.....	3	0	8	0	3	5	4	0	4	27
Nonpareil.....	2	0	0	5	0	2	3	0	0	12

Runs earned—Morse, 2 in sixth inning.
Fouls struck—Morse, 15; Nonpareil, 27.
Time of game—Two hours.
Umpire—Alf. Baker, Esq., "Lone Star" Club.
Catches on three strikes—Rankin, 4."

ONE OF THE MORSE.

Answers to Correspondents.

WEIGHT.—You should be able to receive not less than twenty words per minute, and know how to adjust your instrument properly—which latter is the most important. Apply to any telegraph superintendent or manager, and if found properly qualified, you will have little difficulty in obtaining a situation.

Personals.

Mr. N. E. JACOBS has been appointed ticket agent on the C. P. R. R. and operator of the A. and P. Tel. Co. at Merced, California.

Miss EMMA STANTON has resigned the managership of the Western Union office at Jefferson City, Mo.

Miss EMILY QUICK, of the Great Western office at Council Bluffs, Mo., has accepted the managership of the W. U. Jefferson City, Mo., office, *vice* Miss Stanton, resigned.

Mr. BOGARDUS has accepted the Council Bluffs, Mo., Great Western Co.'s office.

Mr. C. E. MAYNE, formerly agent and operator at Prescott, Iowa, has been transferred to Cromwell, Iowa, on the B. and M. R. R. R., as operator.

Mr. J. W. WARD, formerly of Meridian, Miss., has been appointed agent and operator of the Alabama Central R. R. at Demopolis, Ala.

Mr. J. R. HUGGINS has been appointed operator of the M. and O. R. R. at Waynesboro', Miss.

Mr. H. S. ROYAL, of Demopolis, Ala., has been appointed agent and operator of the Ala. Central R. R. at Bellevue, Ala.

Mr. WARREN, chief operator of the Western Union Lawrence, Kansas, office leaves that office and goes to St. Louis, Mo.

Mr. CHARLES N. HART takes charge of the Lawrence, Kansas, Western Union Telegraph office.

Mr. FRANK J. GATES has resigned his position in the Atchison, Kansas, Western Union office, and goes to Kansas City, Mo.

Mr. H. C. MAHONY takes the situation in the Atchison, Kansas, Western Union office, vacated by Mr. GATES.

Mr. C. D. KELLY has resigned his position in the Sullivan, Mo., office of the A. and P. R. R., and accepted a situation on the Pacific Railroad (of Missouri), at St. Louis, Mo.

Mr. JULES GUTHRIEDGE has accepted a position with the Pacific and Atlantic Telegraph Company at New Orleans, La.

The Telegraph.

New York, Newfoundland and London Telegraph Company.

At a late meeting of the Governing Committee of the New York Stock Exchange, a report was received and adopted from the Committee on Stock List, by which the stock of the New York, Newfoundland and London Telegraph Company was ordered to be placed on the list of stocks to be called at the Exchange. The following is the official statement of the corporation in question:

The Official Statement of the New York, Newfoundland and London Telegraph Company, incorporated by the Legislature of Newfoundland by Act of April 15, 1854.

Capital stock authorized by Act April 15, 1854..... \$3,000,000
Capital stock authorized by Act April 26, 1867..... 3,000,000

Total..... \$6,000,000

Of which there has been issued, and the proceeds expended in construction and maintenance of the company's lines, 38,382 shares, of \$100 each..... 3,838,200

Increase of stock, all subscribed for, and issued June 1, 1872..... 480,000

Total..... \$4,318,200

Bonded Debt—Five per cent. Bonds, mature June 1, 1874, interest guaranteed by Newfoundland Government..... 85,000

Total..... \$4,403,200

No floating debt. Surplus, \$81,746. Net earnings for year ending Feb. 1, 1872, in gold, \$412,207. Dividends declared from Aug. 1, 1867, to date, average ten per cent. per annum.

Officers.—President, Peter Cooper; Vice-President, Cyrus W. Field; Treasurer, Moses Taylor; Secretary, E. T. Hatfield; Superintendent, H. H. Ward.

Directors.—Peter Cooper, Moses Taylor, Cyrus W. Field, Marshall O. Roberts, Wilson G. Hunt.

The Telegraph in San Salvador, C. A.

Mr. S. McNIDER completed his contract for the construction of telegraph lines in San Salvador, C. A., on the 31st of May last. The Republic of Salvador has now about 500 miles of telegraph wire in operation, which cannot be considered a poor showing for a State with only 600,000 inhabitants, especially in Central America.

The Government is building another line of 50 miles, a second line between San Vicente and Chinameca, for which Mr. McNider furnished the wire and insulators.

At the annual meeting of the stockholders of the Maine Telegraph Company, at Bangor, Me., June 26, the following directors were unanimously elected: Hiram O. Alden and W. H. Simpson, of Belfast; Albert W. Paine, J. A. Smith, Albert Hulton and W. P. William Gallup, Bangor; Bion Bradbury and W. P. Merrill, of Portland; and E. F. Littlefield, of Winterport. At a subsequent meeting of the directors Hiram O. Alden was elected president, and W. P. Merrill, secretary and treasurer of the Board for the ensuing year.

Foreign Telegraphic Notes.

THE total number of messages forwarded from postal telegraph stations in Great Britain during the week ending the 22d June, 1872, was 304,289—an increase over the corresponding week of last year of 79,439.

The following message has been received from Port Darwin by the British Australian Telegraph Company: "Express party are now at Daly Waters, waiting for Todd, from Roper, who is overdue. Express will start South after allowing a few days to obtain telegrams from England." Further advices are: "Todd arrived at Daly Waters from Roper's River, Sunday, June 22. The express will deliver news in Adelaide in about five days after London dates. Express service will be established in middle of July, in four days." Since receipt of above a further message has been received, stating, "First express will leave Daly Waters on the 25th June."

It is understood that the Submarine Telegraph Company have for some time past contemplated making a large reduction in their tariff to the Continent, and that with this object negotiations are in progress with the French Government (subject to the approval of her Majesty's Postmaster-General) for a mutual reduction of rates, which, if carried into effect, will establish a uniform charge between all telegraph stations in France and Great Britain; besides which, they hope to effect a considerable reduction in the through rates to Italy, Spain, and the South of Europe. As a diminution in the charge for telegraphic messages has hitherto invariably produced a large increase of business, it may be anticipated that, in adopting these liberal measures, the Submarine Company will add to their own revenue, while, at the same time, they will confer a great boon on the public, and more especially on the mercantile community.

The Cable Company has chartered the steamer Quintin to carry messages between Havana and Key West until the cable can be repaired.

Advices from Australasia to June 6th have been received at San Francisco, Cal., by steamship Mohongo, from Honolulu. The wet season in South Australia delays the resumption of the construction of the overland telegraph line. The Government has purchased a number of horses and will open a despatch express. Only 250 miles of the line remain to be completed, which will probably be done early in August.

The new ministry of the Colony of Victoria is expected to join that of Queensland in establishing a second telegraph cable to Batavia.

It has been resolved to pay the usual interim dividend of two per cent. of the Anglo-American Telegraph Company, on the 1st of August next, for the quarter ended June 30. A similar resolution has been adopted by the French Cable Company.

It is officially notified that the Telegraph Construction and Maintenance Company have successfully repaired the Brest end of the French Atlantic Telegraph Company's main cable. The maintenance ship Robert Lowe was employed for the purpose, and Captain Halpin had charge of the expedition. The necessity for this repair was referred to in the directors' report to the general meeting of the 6th of March last.

It is expected the cables intended to secure communication with Stornoway, Skye and several places on the Clyde, will be laid by or before the end of August. About sixty miles of cable for the purpose have just been completed at the Silvertown Works, North Woolwich, and the La Plata (s. s.) is at present alongside the works engaged in shipping the wiry conductor.

The Industrial Exhibitions of 1872.

THE Forty-first Annual Exhibition of the American Institute in this city is announced to open, under more favorable auspices than ever before, on the 4th of September, 1872. The exhibition will be held in the large building at 63d street and Third avenue, heretofore known as the Empire Rink, which has been purchased by the Institute, and fitted up expressly for its occupancy at a large expense. For many years these annual exhibitions have been as it were milestones of American progress, by which the public have been able to measure the active advance in every department of the arts. Nearly every important invention of the last quarter of a century has first become generally known through its exhibition at one of the Fairs of the Institute. It is confidently believed by the managers that the coming exhibition will be by far the most successful one yet held. The Institute this year, and we think wisely, returns to its former custom of awarding medals and diplomas for articles of superior merit.

The Third Cincinnati Industrial Exposition will open on the same day as the American Institute, September 4th, and promises to be the finest and most extensive affair that has ever taken place in this country. New buildings have been erected by the association, which will afford an exhibiting space of about seven acres. In the arrangements of the various departments

the convenience of both exhibitors and visitors has been carefully consulted. A special fire-proof building has been erected for the department of fine arts. Only first premiums, comprising bronze and silver medals, are to be awarded for the highest degree of merit in each case. The premium list is very extensive, and includes almost everything under the sun in the way of arts and manufactures. The characteristic energy of the Cincinnatians renders it certain that nothing will be left undone to make this the great exposition of the country, if a liberal expenditure of money, and efficient and energetic management, can accomplish such a result.

Premiums for Electrical and Telegraphic Apparatus.

THE managers of the Cincinnati Industrial Exposition, which opens in that city on the 4th of September, have offered quite a list of premiums in the electrical and telegraphic line, among which are silver medals for the greatest improvement in telegraphy, and for the best telegraphic instrument for private use, and a bronze medal for the best burglar alarm telegraph. A silver medal is also offered for the best electric gas lighter. Any information required may be had by addressing the Secretary of the Cincinnati Industrial Exposition.

New Patents.

For the week ending July 2d, and bearing that date.

No. 128,604.—PRINTING TELEGRAPH. THOS. A. EDISON, Newark, N. J.

Type wheel and printing magnet in same circuit, all currents passing through both; but air cushion in cylinder K prevents printing magnet armature from being pulled down unless a full stop is made with a closed circuit.

The air cushion applied to and combined with the printing lever and its magnet in a printing telegraph instrument, in the manner and for the purposes specified.

No. 128,605.—PRINTING TELEGRAPH. THOS. A. EDISON, Newark, N. J.

Constant local through *k* and *l*, which are wound so that a main current through *k* and *m* in one direction shall neutralize one and intensify the other; reserving the current the effect reverses the condition of each magnet, thus is enabled to place type wheels and printing magnets in same circuit.

The compound type wheel magnet and the compound printing magnet in a printing telegraph instrument, in combination with a local constant circuit connected to one set of spools in such magnets, and the main line current connected to the other spools of such magnets, to be operated substantially in the manner and for the purposes set forth.

No. 128,606.—PRINTING TELEGRAPH. THOMAS A. EDISON, Newark, N. J.

A type wheel, in combination with two actuating magnets and connections, substantially as set forth, one for operating a step by step motion one letter or division at a time, and the other for moving the type wheel two or more letters or divisions at a time, substantially as specified.

No. 128,607.—PRINTING TELEGRAPH. THOMAS A. EDISON, Newark, N. J.

Type wheel and printing magnet in same circuit. Type wheel lever, when in action, raises a piston, *r*, allowing *t* and *o* to form contact and make a short or shunt circuit around the printing magnet.

Two electro-magnets, one for operating the type wheel lever, the other for giving the impression, both in the main circuit, in combination with a shunt or cut-out circuit and a shunt breaker, substantially as and for the purposes set forth.

No. 128,608.—PRINTING TELEGRAPH INSTRUMENT. THOMAS A. EDISON, Newark, N. J.

Places printing and type wheel magnets in one circuit, polarity of current transmitted, determining through a vibrating steel armature which shall be brought into use. Provides "unison," for bringing all instruments on a line into correspondence. Uses two type wheels on same shaft. Letters on one opposite blank spaces on the other, and *vice versa*.

1. A compound magnet provided with steel tongues, that direct the force of the electrical current through one portion of the magnet or through another portion, according to the direction in which the current passes to said compound magnet, substantially as specified.

2. The double acting pawls *4* *5*, stops *7* *8*, and lever *f* combined with the ratchet and type wheel, as set forth.

3. Two type wheels on one shaft parallel to each other, and arranged so that the blank spaces upon one wheel come opposite to the characters on the other, and *vice versa*, substantially as set forth.

4. The hollow perforated inking drum surrounded with a surface of fibrous material, and arranged so that the said surface is in contact with the type wheel, as and for the purposes specified.

5. The pawls *16* *16* and crank arms, actuated by the lever *n* to feed the paper, in the manner specified.

6. The arrangement of the magnets that operate the type wheel and printing mechanism within the bed of the machine, as set forth.

7. The circuit closing spring *39* and arm *38*, arranged substantially as set forth, to stop the action of the magnet *b*, for the purpose of bringing several machines in one main circuit into unison, substantially as set forth.

8. The combination of the compound magnet, the type wheel, and actuating mechanism with the printing and paper feeding mechanism, substantially as set forth.

No. 128,660.—GALVANIC BATTERY. JOSEPH A. ROBBINS, Medford, assignor of one half of his right to William B. Wortman, and one quarter to Mrs. H. N. Harris, Boston, Mass.

More of the current utilized than has heretofore been, and saving in material and space.

1. The arrangement, within one battery jar, of two or more basicles or elements, constructed so as to nest within each other, all surrounding the porous cup, in which is placed a suitable number of carbon or equivalent elements, all substantially as set forth.

2. In combination with an element of a battery, two or more conducting wires, joining to form the main conductor, substantially as and for the purposes set forth.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, JULY 27, 1872.

Special Premium.

WE offer as a SPECIAL PREMIUM, for ten new yearly subscribers to THE TELEGRAPHER (or their equivalent in shorter subscriptions), a copy of the *Memorial Bust* of the late Prof. S. F. B. MORSE, executed by the talented young American sculptor, BYRON M. PICKETT, the artist who designed and executed the Memorial Statue placed by the telegraphic fraternity of the country in Central Park, in this city, last year.

This bust is sixteen inches high, and of what is termed cabinet size, and is finished after the style of the celebrated ROGERS groupe.

The subscriptions must be at the regular price of the paper, \$2 per year, in advance.

Advice to Telegraph Operators.

It is a well demonstrated fact, that in any profession those who are best qualified and best educated will be the most successful ultimately. In no business or profession is this truth better established than in telegraphy. It should be the determination of every person who adopts telegraphy as a business to qualify himself or herself for the highest attainable position, and the most satisfactory discharge of the duties which may be assigned.

Telegraph operators, or those who seek to become telegraph operators, make a very serious and damaging mistake when they content themselves with only sufficient professional qualification or education to enable them to perform the merely mechanical functions of an operator. We mean by the mechanical functions the mere receiving and transmitting of despatches, and we regret to say that a large percentage of those who call themselves, and who rank as operators, know little if anything more of their business than this. The truth of this statement must be conceded by every person who has had any considerable acquaintance with telegraphy or telegraphers in this country.

The rapid extension and increase of telegraph lines and offices constantly require the services of an increasing number of telegraphers. All telegraph managers know how difficult it is, and has been for some time past, to fill telegraphic situations requiring first class talent.

There is no scarcity of operators, so called, but they are so inefficient, and know so little of their business, that they are unavailable for situations requiring anything more than the discharge of the mere mechanical duties.

The complaints which have at times been so frequent in our columns, of the depression of business by the teaching of too many operators, has just this foundation—that too many are prepared for the inferior positions; and as the law of supply and demand applies to telegraphy as to every other business, such positions, through the excessive competition for them, are insufficiently compensated. Telegraph managers are also to blame in this matter, for not offering better inducements for properly qualified persons to spend the time and labor necessary to perfect themselves in the telegraphic art, and thus render their services of greater value to themselves and their employers. The telegraph service is largely conducted on the penny wise and pound foolish system. We contend that underpaid and insufficiently qualified labor in telegraphy is a mistake, and loss to the proprietors of telegraphs as well as to the employes. The reduced amount of business which such employes can receive and transmit, the errors, delays and interruptions which they cause, much more than equal the saving which is effected upon their salaries.

Operators, in the first place, should have a good English education. They should be able at least to read, write and cipher readily and with accuracy. How large a proportion of telegraphers now in the service, or those who are seeking to become operators, can do this? We have published, in our "Humors of the Telegraph," some specimens of applications for situations from parties who consider themselves fully qualified to fill telegraphic situations, which show a lamentable deficiency in this respect. Instead of asking or being accorded positions as operators, they should enter some good school, and carefully study the ordinary branches of school education.

Until some higher educational and professional standard is adopted the "Student Question" will doubtless continue to be a cause of trouble, dissatisfaction and discontent.

It is not very difficult to acquire a certain facility in the manipulation of a telegraph key, and practice, in the majority of cases, will enable a person to read telegraphic signals; but, as before stated, something more than this is requisite before the amateur is properly qualified to rank as a telegraph operator. The student should seek to acquire as thorough a knowledge as possible of the laws which govern electrical phenomena, of the relative qualities and value of batteries, of office and instrument connections, switches, repeaters, etc. The causes of difficulties, escapes, cross connections, etc., should be carefully studied, so that when a difficulty or interruption occurs it may be intelligently sought for and quickly remedied. In telegraphy, as in perhaps no other business, time is money, and the operator who can best economize time, and transmit and receive the largest amount of business on a wire, is the most valuable, even though his services command a higher rate of compensation.

It is greatly to be regretted that as yet there has been no coöperation between telegraph managers and practical telegraphers to establish a standard and grades of telegraphic proficiency, by which telegraph employes should be assigned to positions and duties for which they are qualified, and receive compensation accordingly. There seems to be little or no system in the telegraph service in this respect, and, therefore, there is a lack of inducement to bring into or retain in the service the majority of those who are best calculated for it. One of the consequences of this state of affairs is that the ranks are constantly depleted of those who should, by all means, be continued in the service. They are led by the superior inducements offered in other departments of business, and by the conviction that the telegraph has no rewards which they can reasonably hope to attain, sufficient to warrant them in continuing in a profession which they had purposed to make the business of their lives, to abandon it, frequently after years of labor.

But, even under the disadvantages of the present system—or, rather, want of system—the operator who shall acquire a more perfect and adequate knowledge of electrical science and the telegraphic art, will find account in so doing. There are some positions in telegraphy which pay a fair compensation, and they are more likely to be secured by those who qualify themselves as we have suggested.

We hope yet to see a decided reform in this matter of telegraphic service; and, even under existing circumstances, operators can do much to bring this reform about. Let them discourage, as far as is possible, teaching the telegraphic art to persons not qualified by natural ability and education to do credit to the profession. If they are now "plugs" themselves let them seek to become educated and qualified to rank, if not as first class, at least as good operators. Let them bring to bear upon the higher officials as much influence as they can to secure recognition of talent and ability, and let them demonstrate in their own service the superiority and economy of qualified over inferior or only partially qualified labor.

At some future time they may be enabled to combine and consolidate their efforts and influence, and thus secure recognition and coöperation on the part of telegraph managers in establishing a professional standard which shall be generally recognized and acquiesced in. Telegraphy is an indispensable and invaluable art, and, notwithstanding the indifference of those who should seek to advance and perfect it, it does make progress. Its future is bright and promising, and it is

not impossible but that the time may yet come when the practical telegraphers shall share more generally and liberally in its rewards and emoluments.

American Fire Alarm and Police Telegraphs.

AFTER a prolonged and very bitter contest the contract for the additional signal boxes required in the extension of the Fire Alarm Telegraph from Washington to Georgetown, D. C., was, on Saturday, the 13th inst., awarded to Messrs. GAMEWELL & Co. This award was contested by Messrs. HOLLY & MILES, the Superintendents respectively of the Fire Alarm and Police Telegraphs at Washington, who have jointly patented a signal box for the same purpose, which they sought to have adopted by the Board of Fire Commissioners.

In the *Evening Star* of Washington, of the 15th inst., Mr. J. W. STOVER, the agent of GAMEWELL & Co., publishes a lengthy reply to certain statements made by a Mr. McDEVITT at the final meeting of the Board of Fire Commissioners, which he terms slanderous, and which completely vindicates that enterprising firm and their apparatus from said charges, and shows the superiority of their system over that which was attempted to be substituted. In that communication Mr. STOVER makes the following statements, which we republish, and confirm with much pleasure:

"So far as the firm of Gamewell & Co. is concerned, it was only requisite that we should refer to our long experience of eighteen years as constructors of Fire Alarm and Police Telegraphs, and to the high reputation we enjoy in the fifty odd cities of the country, where our telegraphs are now in successful operation, for our complete vindication from the slanderous assertions of Mr. McDevitt. The record of Gamewell & Co. as a business firm is one of which we may well feel proud. We hold recommendations and endorsements from the highest officials of all the cities of the United States and Canadas (not excepting Washington) with whom we have had business relations; and our apparatus has been approved by the most able and prominent electricians of the country; not such men as Messrs. Holly & Miles have, after a long search, induced to endorse their signal box—men unknown outside of the local offices in which they perform their routine duties of telegraphic operators—but men of national and world wide reputation, such as Professors Henry, Page and Morse, the father of the telegraph, and such thorough experts as Generals Stager, Marshall Lefferts, Major Frank Pope, and Judge Caton, of Illinois."

An Illinois Telegraph Institute.

A CORRESPONDENT has called our attention to the advertisements of a so-called Telegraph Institute at Ottawa, Ill., soliciting the patronage alternately of ladies and gentlemen desirous of learning telegraphy. Our correspondent states that the advertiser is or was manager of a small telegraph office, not a native of the region, but a carpet bagger or "plug," and needs himself a couple of years' experience and instruction in the business before he can properly rank as a first class operator. We have written and published so much in regard to these so-called Institutes that it seems almost superfluous to add anything further on the subject. As we have often stated, the only place in which practical telegraphy can be learned to advantage is in a regular telegraph office; and, to become qualified to hold responsible telegraphic positions, such practice and experience must ultimately be had, notwithstanding previous investments in Telegraph Institutes and Colleges.

The Nonpareil Telegraph Apparatus.

THE great demand for the Nonpareil Telegraph Apparatus invented by Mr. F. L. POPE, and sold by F. L. POPE & Co., has shown that it supplies a necessity for some cheap yet good and reliable telegraph apparatus. Although it has been before the public only about ten months a very large number of them have been disposed of, and the demand increases rather than otherwise. Eight dollars for the entire outfit of a telegraph station is certainly sufficiently cheap to enable any one desiring it to have a telegraph of their own.

A MESSAGE of congratulation was received at Rio Janeiro, Brazil, on the 17th of June, from the President of Chile, on the proximate completion of the Trans-andine Telegraph, of which only three miles remained on the 9th unwired. On that day the message, a brief one of 4,000 words, of Spanish hyperbole, was sent off from Valparaiso, carried across the break by a mounted gaucho in a gallop, received at Villa Maria, and there consigned to the post-office, as the Government line between Villa Maria and Buenos Ayres would have taken a whole day to transmit it.

MORSE MEMORIAL BUST.

MR. BYRON M. PICKETT, sculptor of the MORSE MEMORIAL STATUE, erected in Central Park, New York, by the Telegraphic Fraternity of the country, has completed a SMALL BUST of the late Prof. S. F. B. MORSE, which has been seen and cordially commended by the family of Prof. MORSE and many of his friends.

He will supply copies of this BUST to the TELEGRAPHIC FRATERNITY at the very low price of FOUR DOLLARS each. Will forward by Express, C. O. D., if desired.

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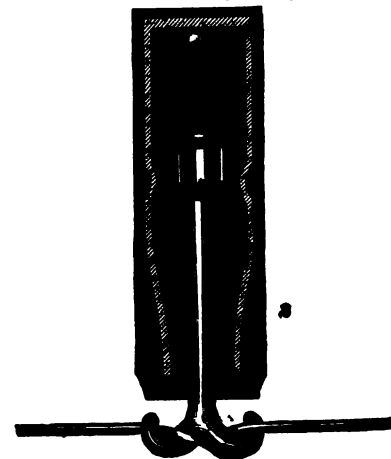
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The Telegrapher

A Journal of Electrical Progress.

Vol. VIII.—No. 50.

New York, Saturday, August 3, 1872.

Whole No. 316

Remarkable Electrical Instruments.

At a recent meeting of the Society of Telegraph Engineers in London first and foremost among the objects of interest was Lord Lindsay's giant electro-magnet, by far the largest in the world. It stood in one corner of the largest room, and consists of several straight massive horizontal bars of soft iron, running upon wheels, and so arranged as to form a rectangle; the opening between the poles is narrow, only a few inches. Lord Lindsay had to jump over the bars to get into the open square space in the centre, and observers stood outside watching his experiments. The magnet consists of more than 26 feet of iron, each bar having a sectional area of about 36 inches. We were told, says the *Engineer*, that it weighs about six tons, and has fourteen geographical miles of conducting wire wound around it, the coils being then protected by outer casings of wood. It was charged by means of a powerful battery, but as the Grove battery used for the purpose is not yet completed, only one fifth the power of the magnet was, according to Mr. Varley's estimate, developed at the *soirée*. Under these conditions a plate of copper fell between the poles at the rate, as nearly as we could judge, of $\frac{1}{2}$ inch per second; this also fell through the air being due to the mysterious action of the magnetic rays upon the electrical currents which those rays induced in the copper plate. One experiment, which particularly attracted the attention of the observers, was that of inserting a lighted taper between its poles, where it burnt freely so long as the magnet was charged, but directly the current was broken, and the magnetism disappeared, the taper was extinguished.

The induced current produced in the wire by the cessation of the magnetism when the battery current is removed, is so powerful that the shock would probably be fatal to any person who, by an unfortunate accident, happened to complete the circuit at the time. To guard against this a very elaborate current reverser has been constructed by Messrs. O. and F. H. Varley, which breaks the circuit gradually by introducing resistances varying from nothing up to infinity. The magnet itself was designed by Mr. C. F. Varley. The conducting wire weighs about 600 pounds to the geographical mile, and is nearly $\frac{1}{4}$ inch in thickness. We are told that the battery ultimately to be used with this magnet will consist of 150 of Grove's nitric acid cells, each platinum plate of which will expose a square yard of surface, both sides of the plate included. A battery of this colossal size has never before been constructed, nor indeed at all approached in dimensions.

All the parts of the magnet, as already stated, run upon wheels, and the front bars are governed by a screw motion, so as to accurately adjust the distance between the poles.

In the course of the evening Mr. Ladd froze some mercury, and the solidified metal was allowed to fall between the poles, to see what diamagnetic effects would result. There were none at all so far as we could see. Most of the observers had taken the precaution of giving their watches into the charge of attendants, lest their good time-keeping qualities should be destroyed by the action of the magnet upon the steel springs.

Another chief object of interest was Sir William Thomson's siphon galvanometer. The apparatus is now in practical use for the reception of messages through the Indian cables, and it is a good instrument for registering indications produced by feeble electrical currents.

Mr. C. F. Varley exhibited a battery very useful for testing purposes where high potency combined with extreme uniformity from day to day is of vital importance. He exhibited 1,000 of these cells, as well as a number of condensers invented by him to enable long submarine cables to be worked rapidly and continuously. The sheets of tin foil in these condensers are so completely insulated that once when they were charged with 1,000 cells, and left for three months, at the end of that time enough of the charge remained to give a brilliant spark. At the *soirée* he discharged the condensers through a sewing needle; the steel was blown into vapor and molten globules, with a loud report and a bright flash of light—some of the globules were blown to the further end of the room. Fine platinum wire was in like manner blown into vapor but not into globules.

Mr. Apps, the optician, exhibited a very beautiful Gassiot cascade, made by him for Lord Lindsay; the electrical stream passed over the edges of a vase made of uranium glass, placed under the receiver of an air pump. He also exhibited a vacuum tube, twisted into very large letters, constructed of uranium glass, and exhausted to a high degree, so that only a $\frac{1}{4}$ inch spark was required to illuminate it; this was proved by allowing the spark to pass into air between the terminals of the coil. Mr. Apps also had on view several of his patent induction coils; one of them gave a spark 6 inches in length, though of the size only, he states, of an ordinary coil giving a spark of $1\frac{1}{2}$ inch. One of the most useful instruments he had on view was De Wilde's electrical probe and forceps, as used in H. M.'s military hospitals and by the Prussians during the late war. The principle of the probe is that it carries within it two wires connected with the opposite poles of a weak battery; a current cannot pass till the ends of the wires at the extremity of the probe touch the bullet; the circuit is then completed, and by an electro-magnetic effect the existence and position of the bullet are made known to the operator. The apparatus is intended to make bullet extraction as easy an operation as possible, attended by the minimum of pain to the sufferer. Among the other things which Mr. Apps exhibited were tubes containing sulphate of strontium and sulphate of barium, which remained phosphorescent many minutes after the cessation of the spark, and an improved Wheatstone's bridge arrangement, giving a scale of differences from 1,000 to 1; there was also included a small ivory disk arrangement for reading off approximately very small resistances to one millionth of an ohm.

Lord Lindsay exhibited among other things a large induction coil, which gave sparks 20 inches long. This coil was made for him by Messrs. O. and F. H. Varley. The last mentioned manufacturers exhibited a vacuum tube 9 feet long, which was brilliantly illuminated. They also exhibited a pencil writing Morse instrument, for which they claimed more cleanliness and a higher rate of speed than with an ink writer; and among their instruments was one of the vacuum lighting protectors for submarine cables, used to prevent lightning, which may strike the land wire, getting into any cable connected therewith.

Inventions and Inventors.

THERE is a saying that "All great things have had small beginnings," and this is true, not only of electric telegraphs but also of the great trade of electroplating, and of the magneto-electric machine, which is now largely used instead of the Voltaic battery. After Volta had made his small and apparently unimportant experiments on the electricity produced by metals and liquids, various persons tried the effect of that electricity upon metallic solutions. Bingham, in 1806, found that two silver medals became gilded in a solution of gold by passing electricity through them. Mr. Henry Bessemer, in 1834, coated various lead ornaments with copper by using a solution of copper in a similar manner; and in 1836 Mr. De La Rue found that copies might be taken in copper of engraved copper plates by the electro-depositing process. Faraday discovered magneto-electricity, in the year 1831, by rotating a disc of copper between the poles of a magnet, and he has stated that the first successful result he obtained was so small that he could hardly detect it. This simple experiment was the origin of the magneto-electric machine.

Persons inexperienced in scientific matters are apt to think that discoveries are generally made by accident. The reverse is, however, the case; nearly all our great modern discoveries were effected by men who were constantly making careful experiments upon the properties of matter and its forces by subjecting them to new and definite conditions. Nearly all persons look upon such discoveries as fortunate ideas, which, when once found, are quickly developed—instead of which they are in most cases slowly developed results of most difficult mental labor.

Discoveries in science are occasionally made, not by original scientific investigators but by practical men, engaged in manufacturing or technical employments. The hydro-electric machine originated in this way: a man at Newcastle was attending to a steam boiler, and

found that he received electric shocks when he touched the boiler. This circumstance was investigated by his employer, Mr. Armstrong, a scientific man, and led him to construct the hydro-electric machine. The accumulation of electricity in submarine telegraph cables was also first observed at the Gutta Percha Company's works, London. It was noticed, on testing the cable by means of a Voltaic battery (the cable being submerged in water), that discharges of electricity flowed from the cable after the battery was removed; this circumstance was investigated by Faraday, and led to improvements in submarine telegraphy. In these instances, also, the same general method was employed, viz., new experiments were made (though not intentionally) by putting matter and its forces under new conditions, and new results were observed.

Many improvements in machinery, manufactures and trades, are effected either by inventors who occupy their lives in making investigations and patenting them, or by practical men engaged in trades and manufactures. These improvements are also effected by means of experiment, observation and study; and each of these classes of men are largely indebted for the knowledge they employ of those scientific observers who previously discovered and made known in books the properties of the substances and forces they require to use. Watt acknowledged that he could not so largely have improved the steam engine had he not learned, from the discoveries of Dr. Black, "what was the heat absorbed and rendered latent by the conversion of water into steam."

In making any improvement—in machinery, for example—a practical man requires to study the influences of many laws and properties of bodies, of which, as a workman, he would be quite ignorant. An ordinary workman in a manufactory works largely by routine, and becomes very familiar with a few properties of the substances of which he has to deal, but remains almost entirely ignorant of the greater number of properties which those substances possess. The properties of a single substance are so numerous that if a workman was to thoroughly study the whole of them he would become a scientific authority on the subjects of heat, light, electricity, magnetism and chemistry. A blacksmith who knew all the physical and chemical properties of iron and steel would be quite a philosopher. It is said that "an ounce of practice is worth a pound of theory;" but we must not forget that however valuable the ounce of practice is without the theory, it is very much more valuable with it.

The Brazilian Cable.

A CORRESPONDENT of the *Railway News*, of London, calls attention to the necessity and importance of establishing telegraphic communication with South America, through laying down the proposed Brazilian cable. This enterprise seems to drag heavily, there being, it is charged, a lack of Brazilian official support, and consequently an indisposition shown to invest in it on the part of English capitalists. This correspondent says: "The dispute between Brazil and the Argentine Republic, and the state of uncertainty which prevails in this market as to the present position of affairs there, give great prominence to the fact that while almost every other country in the world has the advantage of direct communication by telegraph with England, South America has still no better means of intelligence than that rendered by the postal service. Surely those who have the arrangement in hand for carrying out the contract for the Brazil cable will, without further delay, take steps to push this matter forward. Had this contemplated cable been now in operation the present suspense would have been obviated, and as in all probability the dispute has by this date been amicably arranged, the depreciation in South American stocks would have been arrested. South American indebtedness to this country approaches to about one hundred and fifty millions sterling; and just now, when the fluctuations in the values of these stocks vary from one to five per cent. in a day, it may be interesting to point out that the entire cost of the cable would not exceed one per cent. of the loans; in fact, the question of cost is dwarfed into insignificance by comparison with the vast interests involved.

The loss to the several States concerned is not confined to their credit and prestige in our money market;

their commerce receives a check, by reason of the existing uncertainty, from which it may take months to recover. Besides this, the absence of the telegraph retards the progress of South American trade in other ways. For instance, while a merchant in this country can communicate with and have a reply from India and other places in the East in less than twenty-four hours, he must wait for a period varying from six to nine weeks for a reply from South America. Such an advantage as this must tell greatly in favor of the Eastern markets, and against those of Brazil and the Argentine provinces, for such articles of produce as coffee, sugar, hides and cotton. The great telegraph line from Buenos Ayres to the West Coast, and the internal telegraphic system of South America are being actively developed, and an outlet to Europe must, sooner or later, be provided. For want, however, of Brazilian official support, this last and most urgently required cable appears likely to remain long in abeyance.

A Telegraphic Evening.

A LARGE number of persons assembled in the Albert Hall, London, on Thursday evening, July 18th, to hear from Mr. William Preece an account of the wonders of telegraphic science. The arena contained about twenty red covered tables, on which were set forth all kinds of electric apparatus, and the whole interior of the vast building may be said to have been charged with electricity, messages being interchanged between floor and gallery at frequent intervals during the evening. An electric light in the middle of the arena was directed hither and thither at the lecturer's command—the stream of radiance serving to point out as well as to illuminate any and every object to which he desired to call attention. Before the lecture was concluded messages were interchanged between one of the tables in the arena and Teheran, as well as with an Indian station, from which came the intelligence: "Locusts swarming in Scinde; Sutlej Bridge destroyed by floods." A message of compliment and congratulation, addressed to the Prince of Wales, was also received from the Persian Prime Minister, in return for one of a like kind sent from the Albert Hall. Mr. Varley showed, in the arena of the hall, his mammoth battery of a thousand cells, and a torpedo, or something mildly representative of that instrument of war, was exploded by an electric current. The effects of Mr. Varley's battery, with which he charged some large tin foil condensers, were more like those of frictional than galvanic electricity. The condensers, when discharged, gave a sharp report and brilliant spark; and the intensity of the discharge was so great that it blew short lengths of the very indestructible metal, platinum, into a fine cloud of metallic dust.—*The Railway News.*

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Automatic Telegraphy.—Salaries and Character of Operators.

TO THE EDITOR OF THE TELEGRAPHER.

In a recent communication to THE TELEGRAPHER I expressed a wish to make a special answer to your own dissent, and the allusions of your correspondents and others to that feature of some of my letters in defence of automatic telegraphy wherein I have claimed for the hand labor portion of the work extreme simplicity, and, as a natural consequence, corresponding cheapness of the labor required, as compared with the Morse and other telegraph systems now in use.

In estimating the relative value of the automatic, as compared with the Morse system of telegraphy, the question of ease, mental and physical, and simplicity in the working, must necessarily determine the salaries and the character of the employees or "operators," and thus, to a very large degree, affect the cost of telegraphing.

It is not strange that there should grow up in the course of many years a strong sympathy between an editor and publisher and his patrons, and I hope you and your correspondents will pardon me if I express the belief, "just once," and after three years of careful reading of your excellent journal, that you and they are a little "down" on lady operators. And I have had painful evidence, more than once, in discussing the merits of the Little system of automatic telegraphy with gentlemen of the Morse persuasion, that my mission would be much more popular if I ceased to recommend the new system because of its extreme simplicity and adaptation to the labor of young ladies; and I must be allowed to proclaim my belief, notwithstanding your well known gallantry and admiration for the fair sex, that even you would think more highly of my cause if I did not propose to utilize the labor of young ladies in connection with it.

I am not prepared to deny that the general prejudice existing among the Morse male operators against female telegraphists is well founded, for it is undoubtedly true that a first or even a second class female Morse operator, as that system is used in this country, is a rare exception. One of the oldest, most distinguished, amiable and accomplished telegraphists who first permitted young ladies to become operators upon

his lines, and who has done as much or more to popularize and improve the telegraph than any other living man in America, has said to me that in his large experience of more than twenty years in the employment of young ladies, he has not found more than about an average of three to five out of fifty who were able to qualify themselves as creditable Morse "sound" operators; and I have been struck with the corresponding judgment of several music teachers, who have told me that of their young lady pupils not more than an average of one out of ten who earnestly apply themselves to the piano ever attain to even a moderate degree of success in its execution—the correct ear is wanting.

With an extremely difficult system of telegraphing, like the Morse, which, under the most favorable circumstances, requires from one to three years of constant practice for male or female to become experts, high salaries are unavoidable, and are justly due, both on the score of the long time required to learn the business and the mental and physical exhaustion which is inseparable from the duties of the operators.

Notwithstanding these adverse circumstances the fact is notorious that the market is always overstocked with female operators at forty to sixty, and male from sixty to one hundred dollars per month.

It is a well known fact that in every town, village or hamlet in the country there are scores of young ladies who, except as mere drudges, can find no profitable employment. Many thousands of such girls—respectable, educated and refined—exist in every town of the States of the Union; but they can no more become Morse operators than you or I could become first class artists.

Now, out of every fifty of such young ladies probably at least forty-five, and very likely forty-nine, could almost in an hour become quite familiar with any of the automatic machinery, and at the end of a very few days could perforate or print ("copy") twice or thrice as rapidly as they could write with a pen. It is true that the spelling of the most simple words, letter by letter, requires practice and some exercise of the mind, and no one would expect girls, boys or men to do this work with unerring accuracy in the first hour or the first day after sitting down to our machines; and until they do become reliable in reading and spelling their work will have to be scrutinized, and, perhaps, will have to be read over by copy, the same as you are compelled to do, even with the splendid printer who "sets up" or composes your editorials from your faultless manuscript. Your friends of the Morse fraternity assure to their patrons accuracy by their system by charging double rates of tariff, and transmitting the message twice over their lines; and with a young lady or a child operating the perforating machine, even after several days' practice, we might find it necessary to have the perforated message read over by or compared with the copy, to assure absolute accuracy; but when transmitted over the wire by the automatic system the characters as perforated are recorded at the other end of the wire with mathematical precision automatically.

You and your facetious correspondent, "Dixon," and others, have strongly dissented from my expressed belief that the Automatic Company may find an abundance of reliable young ladies as operators, at salaries one half less than are now paid to first class Morse operators. This is a very important point, and if I am wrong I shall be prompt to admit it. What are the facts?

I have shown you why your Morse friends cannot utilize the labor of more than three or five young ladies out of fifty, even after two or three years of teaching; and I have also shown you why nearly every educated and willing girl and boy in the country can, almost in a day, become qualified to manipulate our perforators and copying machines. The labor is considerably less than the working of a sewing machine, whilst the character of the labor corresponds with the manipulation of the keys of a piano, and the mental exercise is considerably less than that required to set up type—there being no labor of the fingers except to depress the key, and no mental labor at all except to read, letter by letter, what is written or printed before you, and direct your fingers to the appropriate keys—each key representing one letter.

The business, or, more properly, the work of automatic telegraphing, is cleanly, genteel, free from all hard or laborious work, and is intellectual and interesting to almost the same degree as the work of a compositor in a printing office. There is somewhat more exercise for the fingers, arms and chest in manipulating the perforator and printer than in playing the piano—but this difference, though slight, is all in favor of the health of the operator.

Now, with these facts before you, will you or some of your sharp correspondents tell me wherein I am wrong in assuming that if it costs the Western Union Company eighty to one hundred dollars per month to man their wires with first class operators, it will not cost the Automatic Company over forty or fifty dollars per month to fill their offices with the very best selection of young ladies in every city and town in the country? Indeed, I have authority for saying that our offer of even thirty dollars per month, at all except large cities and exceptionally expensive or unhealthy locations, would be regarded as a great boon by the young ladies and young men of the country who desire genteel positions, free from severe manual labor or exposure, of which there are a hundred fold more respectable and well educated in the country than can ever hope to find employment in telegraph offices, at even thirty dollars per month.

As confirmation of my views upon this subject, I may mention that during the past three years it has fallen to my lot to receive a large number of letters from young ladies and their friends, making inquiries relative to automatic telegraphy; and from this correspondence and otherwise, I have learned that, taking the country through, outside of exceptional places like our large cities, the sum paid to highly educated young lady teachers ranges from three to six dollars per week, without board; and equally respectable and well educated young ladies are to be found by the score, in every town of five thousand inhabitants, who hold laborious positions in dry goods and other shops for an average sum of three to five dollars per week. These young ladies could not become acceptable Morse operators, but they can, every one of them, become good automatic operators.

In conclusion of this already too long letter, let me relieve the minds of editors and correspondents of THE TELEGRAPHER about that wonderful child, who is neither a seventh nor a ninth—neither a seer nor a prophet, nor the son of a prophet, but is a very simple, ordinary child of ten years. What he has done any other ordinarily intelligent child of ten years old may do, and that is manipulate correctly one of our perforators at sight; and I will guarantee that after one week's practice such a child can perforate as many words, in a given time, as the editor of THE TELEGRAPHER can, after twenty-five years of practice, write with a Morse key.

D. H. CRAIG.

The Status of the Editor of the Official Organ.—The Bonds Question.

TO THE EDITOR OF THE TELEGRAPHER.

YOUR correspondent, "Q. Langwell," in last week's paper, asks for certain information in regard to the present editor of the Western Union official organ. Under the circumstances it is somewhat difficult to understand of what importance the personal views of the editor of that paper are to your correspondent or anybody else. Is not Q. L. aware that the policy and tone of the paper are not those of the editor, whoever he may be for the time being, but are dictated from the executive office of the company? The very fact of its being an official organ is sufficient evidence of this. It is not to be supposed that the Western Union Company would expend thousands of dollars a year to maintain an organ which should reflect the private views of its editor. He is paid to represent the company, and must necessarily support and vindicate with as much ability as possible the policy which its executive officers deem most advantageous to its interests. The present editor of the official organ is a practical telegrapher, and doubtless is solicitous of a better state of feeling between the Company and its employees, as who concerned or interested in the welfare of the employees is not? That he can favor the employees at all in the management is, of course, out of the question. The Western Union employees understand this perfectly, as is shown from the fact that the invitation to communicate to the Journal their grievances has not thus far been responded to in a single instance.

There is another point in "Q. Langwell's" communication in which he is manifestly in error—that is, the reflection upon the rule of the Company requiring from every person holding a position of trust a bond or security against loss to the Company, from misappropriation or embezzlement of funds of the Company that may come into his or her hands. This is but an ordinary business precaution, and one which does not necessarily imply distrust of any individual employee so long as it is a general rule, and enforced upon all, without favor to any.

The Company has several thousands of employees, through whose hands yearly pass some seven or eight millions of dollars. It is utterly impossible to know intimately every one of these employees, their honesty and reliability. To guard the treasury of the Company it is necessary, then, that some security should be furnished, and it would seem that the only plan which could be adopted, that should not reflect invidiously upon any individual employee, is to require from all occupying places of trust bonds for the faithful administration of the funds coming into their hands. If such a bond were required of Q. L., for instance, and omitted in the case of John Smith, each holding positions of trust in the service of the Company, the former might justly complain that it indicated a special lack of confidence in him, and resent it as an imputation upon his honor and honesty. Does not Q. L. know that every Government employee intrusted with funds has to furnish bonds proportioned to the amount liable to come into his hands? Is it an insult to the Secretary of the United States Treasury, for instance, or the Treasurer of the United States, whose honesty is proverbial, that they are required to furnish bonds in a large amount, besides taking a solemn oath to properly discharge their trust? The idea is absurd, but no more so than that a similar requirement is an insult and indignity to telegraph employees.

The Western Union Company has done and is doing many things for which its managers may be justly criticised and censured, but they do not deserve censure for the exercise of ordinary care and prudence in securing the proper application of and accounting for its funds.

TELEGRAPH EMPLOYE.

A Detroit woman, struck by lightning, called lustily for the police.

Personals.

Mr. J. W. GARDNER, of the Cumberland, Maryland, office of the Pacific and Atlantic Telegraph Company, desires to ascertain the present address of Mr. R. BELFORD, telegraph operator, formerly of Toronto, Canada.

Mr. JOS. E. FENN has resigned the situation of manager of the Brooklyn, N. Y., Atlantic and Pacific telegraph office.

Mr. FRANK KANE has been appointed manager of the Brooklyn, N. Y., office of the A. & P. Telegraph Co., vice JOS. E. FENN, resigned.

The Telegraph.

The Great Western Telegraph Company.

Mr. O. D. BOND, general agent of the Great Western Telegraph Company, has been in our city during the week, looking after the interests of this independent telegraph line. Most of our business men have taken stock freely in the enterprise, and the line will be completed to Burlington in about thirty days. From Lawrence it runs down the L. L. and G. to all important points in the southern and eastern part of the State. From the L. L. and G. it will be built across to Neosho Falls, thence to Leroy and Burlington. From Burlington the line is to run to Emporia, and will connect with all important towns in Kansas. An office will be opened in our city for telegraphic business, and this enterprise will work a speedy revolution in reducing rates on despatches. This will give us direct telegraphic communication with all commercial business centres east and west.—*The Burlington (Kansas) Patriot.*

Foreign Telegraphic Notes.

THE director of the International Telegraph office at Berne has been instructed by the Italian Minister to communicate to all the Governments and companies represented at the Telegraph Congress held last winter at Rome, that, with the exception of Persia and Denmark, all the parties interested have ratified the Convention, and that it came into operation on the 1st inst. (July).

At a half yearly general meeting of the Telegraph Construction and Maintenance Company, recently held in London, the Chairman said that "all he had to tell the shareholders was that the company was very busy; beyond that he had really nothing to speak of. The cable on which the company is now engaged is for the French company. When they last met the cable was not the property of the French company. Before the last meeting a contract was entered into to make a cable to connect Land's End with New York, and the cable had been since taken up by the French Atlantic company. They were very actively engaged on the cable, and he hoped that, by this time next year, if the season were favorable, it would be laid, and when that was finished he trusted that they would be in a position to go on with something else."

In answer to questions the Chairman further stated that the ship was now out for the purpose of repairing the Australian cable, which, however, was not broken. The French cable had been put in thorough repair during the past month by the company, at the cost of the French company.

Advices from Yokohama, Japan, to July 7th, have been received by steamship Colorado at San Francisco, California. Telegraphic communication between Jeddo, Nagasaki and the outside world was to be completed in five weeks.

The Jamaica Legislature has referred to a special committee of the Council the petition of the agent of the New York Associated Press for a protective copyright of sixty hours on the telegrams of the Association arriving in Jamaica. The agent represents in his memorial that no sooner are telegrams obtained, at great expense to the members of the press who contribute towards this enterprise, than other papers immediately reproduce these telegrams, to the great injury of the enterprising press of Kingston.

Relative Durability of Heavy and Light Submarine Telegraph Cables.

A GOOD and durable submarine telegraph cable is unavoidably heavy and expensive. Various projects for the construction of light and cheap cables have been from time to time brought forward, but have met with little favor—experience having shown that they are short lived—and notwithstanding their relative cheapness, as regards first cost, are the reverse of economical.

In a paper read by Sir James Anderson, at a recent meeting of the London Statistical Society, upon the "Statistics of Telegraphy," this subject was considered at some length. With regard to the material of the submarine cables Sir J. Anderson said he was strongly in favor of the old fashioned and expensive manufactures; they were invariably more durable, and were found to be cheaper in the end than the new and cheap cables. The report of the joint committee, which was appointed by the Lords of the Committee of the Privy Council eleven years ago, to investigate the matter, showed that in almost all cases small cables had been found liable to mishaps, while the heavier the cable

had been the greater had been its durability. Mr. Newall had said in his evidence that a hemp covered cable which he had attempted to lay was destroyed in two years. It was stated in the paper that all cables which were manufactured and laid down upon the principles which were established in 1859 were at the present time in good working order, and every divergence from these principles had been at best a costly experiment or an utter failure. Sir James Anderson was of opinion—and the opinion was shared in by Captain Halpin—that it was advisable to multiply every precaution which should increase the strength of the cable, and to keep the strength intact as long as possible. Finally, he believed that the so-called economy would be at the expense of security, and that the cable of the future would be even heavier, more perfect, and more costly than the cable of the present day.

Cheap Telegraphy.

THERE is a very common impression that the reduction of telegraph rates will so increase the business of telegraph lines as to more than compensate for the reduced price on single despatches. To a certain extent this is true; but experience has shown that, beyond a certain extent, reduction must and does entail an absolute loss to the revenues and profits.

As has been shown by statistics from official sources which we have published from time to time, the Government telegraphs of Europe, which are so constantly cited by the advocates of cheap and Government telegraphs in this country, are maintained at a large annual excess of expenses over receipts. In England, which has a limited and densely populated territory, the profits of the business are more apparent than real—expenses of large amounts, which should be, and in this country are included in the regular working expenditures and for maintenance, being there charged to construction or capital, and the balance in favor of the system being thus apparently shown.

Salaries of employes, which enter so largely into the cost of carrying on the telegraph business, rents, etc., are much lower in that country, and in all European countries, than here, probably averaging fifty per cent. less. This fact must not be overlooked in estimating the proper relative rates at which the public should be charged for telegraphic service. This is a country of high prices for almost everything, and, in comparison with other things, the rates now charged for telegraphic service cannot be considered excessive. They have been largely reduced during the past four or five years, and the natural and inevitable result of active competition will be to reduce them still more from time to time, and quite as rapidly as the interests of telegraph proprietors and telegraph employes will warrant.

August Magazines.

THE AMERICAN JOURNAL OF SCIENCES AND ARTS.

THIS leading scientific publication of the country is issued more promptly than usual this month, and its contents, although rather too abstruse for the general reader, are of great interest and value to the student and others, more especially to those who are devoted to literary and scientific pursuits and investigations. The current number contains an article from Prof. TROWBRIDGE, of Yale College, on "OHM's Law Considered from a Geometrical point of view," which will be found of interest to electricians sufficiently scientific to understand its calculations and deductions.

In addition to the more elaborate papers published, it contains the usual full summary of scientific intelligence in the several departments of science. Published at New Haven, Conn., by its editors, Messrs. DANA & SILLIMAN.

INDUSTRIAL MONTHLY.

The *Industrial Monthly* (formerly *The Technologist*) is one of the best, as it is one of the cheapest of the monthlies which are especially devoted to the interests of those engaged in industrial pursuits. It is edited with care and ability, and, notwithstanding the low price at which it is furnished, no expense is spared to make it an elegant as well as a valuable publication. Its wood cuts are well executed, and they are liberally scattered throughout its pages. The August number is an excellent one, we should judge, from a hurried examination. Published by the Industrial Publication Company, 176 Broadway, New York.

THE PHRENOLOGICAL JOURNAL.

This excellent magazine, for August, is as usual promptly upon our table, and from such examination

as we have been able to give it we should say that it maintains its high place among our leading monthlies. Its sketches of public men are readable and timely. The present number contains excellent portraits of President GRANT, Senator WILSON, of Massachusetts, Hon. GEO. J. POST and FISHER AMES.

There is a good deal of interesting miscellaneous matter of general interest and excellence.

THE MANUFACTURER AND BUILDER.

The August number of *The Manufacturer and Builder* presents a varied table of contents, of interest and value to all who are engaged in industrial pursuits. The articles are well and profusely illustrated with superior cuts. Published at 37 Park Row, New York, by the Engineers and Manufacturers' Publishing Company.

OWING to electric action, not well understood, it is found that iron rails rust much more rapidly when exposed separately to the weather than when connected into a continuous track.

Eleven telegraph poles, seventy yards apart, were recently peeled by a bolt of lightning at Hillsboro, South Carolina.

The highest office within the gift of the Government is the superintendency of the weather signal station on Pike's Peak, which is fourteen thousand feet above the sea level.

New Patents.

For the week ending July 9, and bearing that date.

No. 128,708.—DIAL TELEGRAPH INSTRUMENT. Stephen Chester, Elizabeth, N. J.

A device for rendering the electric impulses sent from a manual transmitter to control the movements of a dial instrument or the type wheel of a printing instrument, uniform in the length of opening and closing and in the velocity with which they succeed each other.

1. The combination of a wheel and revolving shaft passing through the centre thereof, but attached to each other only by an elastic spiral spring or its equivalent to open, close, or change currents of electricity, substantially in the manner and for the purposes hereinbefore set forth.

2. The combination of circuit and escapement wheels, controlled by a pallet, with a shaft passing through the centre of said wheels, but revolving independently thereof, and an elastic spring or its equivalent connecting them, to open, close, or change electric currents in transmitting or receiving electro-telegraph instruments, substantially in the manner as hereinbefore set forth.

No. 128,894.—TELEGRAPH APPARATUS. George Little, Rutherford Park, N. J.

1. A rheostat made in two parts, united at one end and provided with two adjusters, substantially as and for the purposes set forth.

2. An armature made of thin sheet metal and vibrated, substantially as set forth, to form a receiving sound instrument.

3. A metallic connection between one pole and the other at the operative end of an electro-magnet, to more rapidly disperse or neutralize the residual or induced magnetism, substantially as set forth.

4. A metallic connection between the two operative poles of a magnet, made adjustable, substantially as set forth, for regulating the action of such connection in neutralizing the residual or induced magnetism.

5. The connections, arranged substantially as specified, for the main line, and constant circuits between the rheostats, the electro-magnets and the switch, in combination with the vibrating armature, substantially as specified.

6. The battery and the receiving instrument so connected to the same, binding screws as in combination with the vibrating armature and connections to said binding screws, substantially as and for the purposes set forth.

Recent British Patents.

No. 2,172.—O. Wheatstone, Kt., 19 Park Crescent, Regent's Park, and J. M. A. Strok, 29 Tolmer's square, Hampstead road, Surrey. ELECTRO-MAGNETIC TELEGRAPHIC APPARATUS. Dated August 18, 1871.

1. Improvements in step-by-step telegraphs, to enable the indicator of a large dial, or the dial itself to be moved rapidly with certainty, by transferring the propulsion of the index or pointer to the action of maintaining power, limiting the work performed by the transmitted currents to the controlling of the escape wheel, and introducing a special arrangement overruling the retarding effect due to the weight of the index hand. 2. Improvements in type printing telegraphs: (a) the application of the above means to regulating the type-wheel; (b) the means employed by which the stamping of a letter on the paper strip is effected automatically, immediately after the cessation of the last of the electric currents necessary to bring the type wheel to the requisite position; and (c) the peculiar contrivance for regularly supplying ink to the type wheel. 3. A switch or current director, consisting of a series of finger studs or keys, so disposed that on the pressure of any one key the current is diverted from the previous channel into a new one. 4. A magneto-electric apparatus suited for effecting producing the currents necessary to ring electro-magnetic bells.

No. 2,219.—W. R. Lake, Southampton Buildings, London. AN IMPROVED GALVANIC BATTERY AND LIQUID. Dated August 23, 1871.

An electric battery, the zinc element of which is made conical, while the carbon element is made in the form of a cylindrical cup, closed at the bottom, and provided at or near its top with a ring or collar of gutta serena or India rubber, by the conical form of the zinc element the effect of the exciting liquid is materially increased, and by the collar on the cup shaped carbon element the evaporation of the exciting liquid is counteracted, and the carbon element is protected against injury from coming in contact with the zinc element, and it also is insulated therefrom when in an oblique or eccentric position. Also, a liquid for galvanic batteries, made by mixing a solution of bichromate of potash with a small quantity of lime and sulphuric acid.

Died.

STANTON.—At Toronto, Ontario, July 17, WILLIAM CHARLES STANTON, infant son of William H. Stanton, aged six weeks and three days.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, AUGUST 3, 1872.

Special Premium.

WE offer as a SPECIAL PREMIUM, for ten new yearly subscribers to THE TELEGRAPHER (or their equivalent in shorter subscriptions), a copy of the *Memorial Bust* of the late Prof. S. F. B. MORSE, executed by the talented young American sculptor, BYRON M. PICKETT, the artist who designed and executed the Memorial Statue placed by the telegraphic fraternity of the country in Central Park, in this city, last year.

This bust is sixteen inches high, and of what is termed cabinet size, and is finished after the style of the celebrated ROGERS groupe.

The subscriptions must be at the regular price of the paper, \$2 per year, in advance.

Female Telegraph Operators.

WE print in the present number of THE TELEGRAPHER another of Mr. D. H. CRAIG's interesting and well written communications relative to automatic telegraphy, especially treating of the "salaries and character of operators."

We do not propose at this time to enter into a full discussion of the important matter upon which Mr. CRAIG writes, but feel that on one point he has entirely misapprehended THE TELEGRAPHER and its editors. Mr. CRAIG says: "It is not strange that there should grow up in the course of many years a strong sympathy between an editor and publisher and his patrons, and I hope you and your correspondents will pardon me if I express the belief, 'just once,' and after three years of careful reading of your excellent journal, that you and they are a little 'down' on lady operators."

We take pleasure in conceding not only that a strong sympathy has grown up, but has from the first existed between the present publisher and editors of THE TELEGRAPHER and its patrons (subscribers). THE TELEGRAPHER was established, and has always been maintained and conducted as the organ and exponent of the telegraph operators of the country. We have been charged at different times, and by parties in diverse interests, with being the organ of the opposition, or competing, and the Western Union Companies, when, as we have endeavored to manifest, at all proper times and in all suitable ways, that we are neither. This paper enjoys, we believe, the proud distinction of being the only one in the world which is entirely devoted to the interests of telegraphic employés. We seek to advance the real interests of this large and rapidly increasing class. That we may sometimes err is very probable, for "to err is human," and we claim no infallible attribute in this respect; but, as far as intention goes, we claim to have honestly, zealously, and with such ability as we possess, pursued the course, and advocated such measures and policy as we believed practicable, and for the real interest of all telegraphic employés, male and female. We have no old foggy notions or prejudices against telegraphic improvement or progress, and would be oblivious to the lessons of history and experience if we should believe that any such progress or improvement could, ultimately, be adverse to the interests of employés, while at the same time advancing the interests of employers. It is a narrow and stupid policy which would seek to retard or defeat the adoption of any such improvement, from the anticipation that those engaged as employés in any specialty were to be injured by its success.

The "female operator" question has been heretofore exhaustively discussed in the columns of THE TELEGRAPHER—and at one time the discussion became so voluminous that we were obliged to discontinue it, as about all that could be said on either side had appeared, and we were overwhelmed with communications on

the subject. The cause of the prejudice of a portion of the male telegraphers against the employment of females in the business was, that it was the intention of telegraphic employers (and this was undoubtedly correct to a certain extent) to use them as a means to force a lower scale of compensation. That this has not been the result is true, and we shall refer to this point again further along. In an editorial printed June 13, 1868, closing the discussion for the time, we took occasion to offer a few reflections and suggestions on the subject which defined our position quite clearly. We said: "It is too true that the standard of compensation for females in the telegraph, as well as in other business, is less than for males; but if what is said by the opponents of female operators as to their inefficiency and lack of competency is true, this would be a sufficient explanation of the fact. We do not believe, however, that this is the real reason for the lower rate of compensation received by ladies. It, in part, arises from the prevalent injustice which, taking advantage of the limited range of employment open to females, and their necessities, forces them to accept a less compensation for similar services than is paid to their more fortunate brethren, who, if adequate remuneration is denied them in one line of business, have a multitude of employments to which they can turn. * * * We do not believe that ladies desire to labor for smaller compensation than others in the business. Let our efforts, then, be devoted not to depreciating the value of their services, and thus affording a justification to their employers in withholding their just dues, but to bring all to an equitable standard of compensation."

These were our sentiments then, and they are our sentiments now. That the female telegraphers of the country do not share Mr. CRAIG's opinion that we are even a little "down" on lady operators, the numbers of them whose names are upon our subscription list is very satisfactory evidence.

At the time the discussion referred to occupied the columns of THE TELEGRAPHER there existed, on the part of male operators very generally, the impression that the employment of females in the business would result in depressing salaries to such an extent as to practically exclude men, especially those having families to support, from the business. We did not share these apprehensions, or the anticipations of certain telegraph employers and managers, that through them they would be enabled to establish an economical (as far as the salary list was concerned) administration of the telegraph. Experience for the four years which have since passed has shown that we were right. Women have engaged in the business in increasing numbers, but any depreciation of the rate of compensation cannot justly be charged to them. With a few exceptions they have occupied the smaller salaried positions. That these exceptions would have been more numerous had they developed a larger proportion of good, expert operators, is unquestionable. We know women operators who are expert and reliable, and these are always in demand, and at salaries not very much lower than their brethren of equal ability. We have never made out so unfavorable a case for women telegraphers as Mr. CRAIG does, and we must say that if he really believes that women are so generally incapable of becoming expert operators, we cannot consider his prospects flattering for equipping his offices with the number of expert and reliable females required at the rates of compensation he suggests.

We hear now of very little antagonism on the part of the men employed in telegraphy to the employment of females in the business. We find them in most offices of any size working side by side with men, and except in the New York main office of the Western Union Company—where the absurd and tyrannical management and rules of the woman who, apparently, is supreme not only in her own department but in that of the General and District Superintendent, excites antagonism—they work together amicably and with mutual good feeling and respect.

We think Mr. CRAIG is mistaken in supposing that the market is constantly overstocked with the better class of operators. In fact we have reason to know that such is not the case. Of so-called operators—more generally termed "plugs" by the fraternity—it is true that there is always an over supply, and this will undoubtedly continue to be the case. A considerable percentage of those, male and female, who learn, or attempt to learn operating, never do become experts.

They for a time fill inferior positions and eventually become discouraged; or, estimating their own expertness and ability higher than the facts warrant, consider themselves as injured and oppressed by their superiors, and drift into other, and, it is to be hoped, more congenial employments. Thus there is a constant influx and egress from the ranks which, at times, from the number seeking employment, gives an appearance of an over supply of telegraphic labor. In addition to the incompetents who fail to continue in telegraphic service, to their own advantage and that of the service, many of the better class of telegraphers are continually abandoning it, because more lucrative and promising employment is offered to them, and this constantly depletes the ranks of those whose services are valuable and desirable. From these causes, at this time it is exceedingly difficult to suitably fill any number of positions which require really first class telegraphic talent. We understand that at the present time there are a number of positions in the Western Union service, in this city and vicinity, that even that Company, which, of course, has the best chance to obtain a superior class of employés, finds it impossible to fill satisfactorily. There is certainly no prejudice on the part of the management of that Company against the employment of females, and if they could be had properly qualified, and in sufficient numbers, their sex would certainly not debar them from engagements for many of these positions.

A New Storm and Danger Signal—Holmes's Signal Light.

Mr. MORRIS, of the Kansas Pacific Railway and the Automatic Telegraph Company's headquarters, at No. 78 and 80 Broadway, in this city, has taken the agency for, and is seeking to introduce in this country a new and valuable storm and danger signal, known as HOLMES's Signal Light. It is intended for use for marine and other purposes requiring an unfailing and brilliant signal light. These lights are composed of a stout tin cylinder, three inches in diameter, 24 inches high, from the lid of which a conical brass burner projects—the perforated apex of which is hermetically closed by means of a soft metal cap, securely soldered. Through the bottom of the cylinder a metal tube, one inch in diameter, passes into the interior of the case to within one eighth of an inch of the upper lid, which carries the cone. The portion of the tube within the case is perforated with holes, while the tube projects outside the case three and a half inches. The opening at the bottom of this tube is likewise hermetically sealed by a soft metal cap. The interior of the cylinder surrounding the tube is then filled with the chemical ingredients, and the whole soldered down air tight.

When the signal is required for use it is placed in a light wooden float and secured by two lips passing under two clips on the float. The soft metal cover on the top is now cut off with an ordinary knife, to enable the gas to escape, and next the lower cap is cut, and the whole apparatus cast overboard. As soon as the salt water comes into contact with the filling a brilliant flame bursts out.

The value of this light for the purposes for which it is intended will be realized at once from the description. It has been approved by the Grand Duke Constantine for adoption in the Russian navy, and we are informed that it is being tested by the United States naval authorities, and will probably be adopted by our own Government. It has already been approved and adopted by the Board of Trade in England, and there is every prospect that it will soon be generally adopted for mercantile as well as naval shipping in this country.

Pickett's Memorial Bust of Prof. S. F. B. Morse.

WE believe that this memento of the late Prof. MORSE will meet with a general demand, not only from the telegraphic fraternity but others who are interested in scientific and practical discoveries and inventions. The artist has done his work artistically and conscientiously, and deserves a liberal patronage. The bust may be seen at our office, and is offered for sale by F. L. POPE & Co., who have arranged with Mr. PICKETT to receive orders for it.

Preparations are being made for the construction of a telegraph line from Fort Gibson to Gibson Station, on the M. K. and T. R. R.

MORSE MEMORIAL BUST.

Mr. BYRON M. PICKETT, sculptor of the MORSE MEMORIAL STATUE, erected in Central Park, New York, by the Telegraphic Fraternity of the country, has completed a SMALL BUST of the late Prof. S. F. B. MORSE, which has been seen and cordially commended by the family of Prof. Morse and many of his friends.

He will supply copies of this BUST to the TELEGRAPHIC FRATERNITY at the very low price of *FOUR DOLLARS* each. Will forward by Express, C. O. D., if desired.

Address, **BYRON M. PICKETT,**
No. 765 Broadway (Room 7), New York.

PICKETT'S STATUETTE OF PROF. MORSE.

F. L. POPE & CO. have arranged with Mr. BYRON M. PICKETT to receive orders for his

ELEGANT MEMORIAL BUST

OF THE LATE

Professor S. F. B. MORSE.

The Bust may be seen at our office, 194 Fulton Street, New York. Price, \$4. Sent, C. O. D., if requested.
Address, 194 FULTON STREET. P. O. Box 6010.

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The undersigned have on hand, and for sale on favorable terms, the following Telegraph Instruments and Apparatus:

BRADLEY'S BOX RELAYS AND KEYS.

Only a few of these remain unsold, and, as Dr. BRADLEY does not propose to engage hereafter in the manufacture of Telegraph Instruments, when these are disposed of no more can be obtained. Parties desiring to obtain them should make immediate application.

One pair of the celebrated and favorite
POPE & EDISON TYPE PRINTERS,
or Private Lines. These Instruments are in good order, and will be sold cheap if applied for immediately.

The popular

ANDERS & CO.'S MAGNETO-DIAL TELEGRAPH INSTRUMENTS.

for Private Lines. They require no battery, are always ready for use, and can be operated by any person with a few minutes' instruction.

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A new combination, with Key on same base with the Bell, or otherwise, as may be required. Made under the patent of F. L. POPE.

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The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

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A large stock always on hand and for sale at the lowest market prices—both free and in bond.

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WITH A CENTRAL OFFICE,

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UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

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UNIFORM RELIABILITY.

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Dayton, Ohio,
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Fitchburg, Mass.,
Hartford, Conn.,
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Jersey City, N. J.,
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Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
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The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

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First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

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These Features combined form the

Only **PERFECT, COMPLETE** and **RELIABLE** System

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It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

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that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

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AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original *FARMER & CHANNING PATENTS*, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

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the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

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has met with the universal approbation and commendation of the

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AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

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ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION OF CANADA,

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Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

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We offer for sale, among other novelties, a SOUNDER that will work practically with a single DANIELL cell, a BATTERY that does not require to be taken down but once a year, and the very best MAIN LINE SOUNDERS made.

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Relative TENSILE STRENGTH, homogeneity and elasticity—decreasing the liability to breakage from cold weather, sleet, etc.;

CONDUCTIVITY—insuring great improvement in the working of lines in any condition of the weather;

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The finest assortment of Instruments in use in telegraphic practice kept constantly on hand.

Specialties made of

Fire Alarm Street Boxes—Improved Pattern.

These Instruments will work in any circuit, and their performance is guaranteed.

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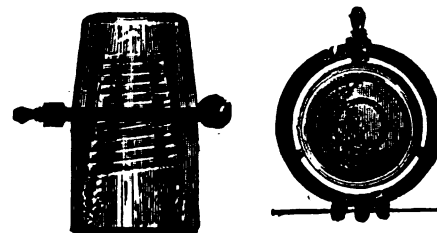
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Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

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As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

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The attention of

Telegraph Companies, Superintendents and Line Builders is called to a

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While great care and attention has been given to Instruments and Insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European Governments, only fit for fencing purposes. Many tons of such material now remain here, utterly unsaleable and unfit for use.

The researches of the able electricians of Europe have resulted in establishing a standard of excellence for Telegraph Wire far exceeding that with which we have heretofore been satisfied.

We extract from the minute and specific details a few of the requirements of a

STANDARD GOVERNMENT WIRE.

1st.—The wire supplied under this tender must be of the gauge known as No. 2, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable, and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

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4th.—No deviation greater than .006 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

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In other specifications a breaking strain of 1,260 pounds or No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

We now offer for sale this Uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market, to which this system of tests is uniformly applied.

We shall designate it by the Trade Mark,

CHESTER, A 1,

and our customers ordering it may be sure of receiving an article always uniform, and always the very best.

The capacity or endurance of No. 9 is 21 to 23 twists upon itself in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

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with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 29. The omission of the elongating process would increase the flexibility and the tenacity.

Although the wire has been proved immensely superior to that commonly sold, its price will closely approximate to that of the inferior article.

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COTTON and SILK. Manufactured by

SAMUEL C. BISHOP,
at the Manufacturers' prices. Sole Agency in the United States
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GALVANIZED WIRES
Manufactured by Messrs. RICHARD JOHNSON &
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Long Lengths; Superior Quality; Low Prices.

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The superior quality of this Wire consists in its LIGHTNESS,
STRENGTH, CONDUCTIVITY and DURABILITY; in all of which re-
spects it greatly exceeds Galvanized Wire.

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A Stock of these Insulators always on hand.

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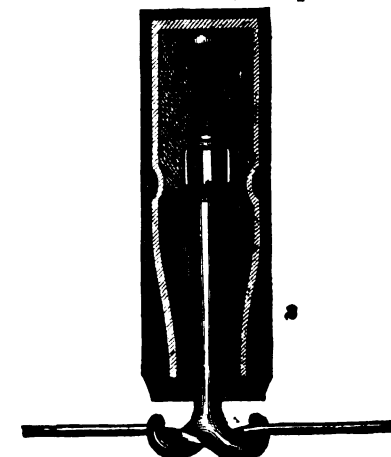
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The Telegrapher.

A Journal of Electrical Progress.

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Whole No. 317

Original Articles.

The Telegraph and Its Relation to Political Matters.

THE discussion of politics has no place in THE TELEGRAPHER. It may not, however, be out of place to consider the relation of the telegraph to political movements, and its effect at a time like the present, when a Presidential election is pending and a heated political campaign is in progress.

In politics and the conduct of political contests the telegraph has unquestionably effected a most remarkable change. It has necessarily become one of the agents used and relied upon universally by all parties to forward their political operations and aspirations, and to enlighten, as it were simultaneously, all sections of our extensive national domain. The wires are crowded in all directions with the manifestos of leading politicians and statesmen, the proceedings of political meetings, the announcements of political conversions and defections, and the documents the publication of which is expected to affect favorably or otherwise the prospects of the contending parties. Senator Schurz delivers a great speech in St. Louis, and the next morning, by means of the telegraph, it reaches not merely the comparatively small number who attended the meeting, or who can be reached by the newspapers of that vicinity, but nearly the entire people of the United States, from the Atlantic to the Pacific Ocean. Secretary Boutwell speaks in North Carolina, and his words are telegraphed throughout the whole country, and within a few hours are read and commented upon by millions of people, who, before the introduction and popularization of the telegraph, would either have never seen them at all or not until days and weeks had elapsed. Senator Sumner addresses the colored people of the United States, and his sentiments and advice are, within twenty-four hours, made known and commented upon everywhere. Speaker Blaine responds, and his sharp arraignment of the Senator is as rapidly disseminated. And so the work goes on from day to day, the telegraph being the medium through which all reach the public eye and ear, and hope to influence the votes of those whom they address. The effect of this is to shorten the actual time devoted to political campaigns, and to enable all parties to present their views, arguments and statements more generally, and the people, who at last must decide, to act more intelligently and with a better appreciation of the issues involved and the results to be attained. And when the time for the decision comes, and the votes of the people are to give success or defeat, there is not that weary "waiting for the verdict" which formerly, in close contests, has sometimes extended to weeks of alternate expectation, hope and despair; usually a few hours will tell the story, and the victors can burn their powder and hold their rejoicing jubilees, and the defeated console themselves with the expectation that "next time" the result may be different and the positions reversed.

It will be seen, therefore, that the telegraph, in political as in almost every other department of civilized life, has become a most important and indispensable agent. It is of the utmost importance, therefore, that it should be maintained in perfect independence of all political parties and administrations. It should be free from all suspicion even of partiality in the dissemination of political matter, and this it cannot be if it should be placed under Government control. Did the party in power for the time being manage and administer the telegraph, it would rest under the suspicion and imputation of conducting it with a view of perpetuating its own supremacy. While human nature remains as it is this would be unavoidable, and it would inevitably be most damaging to telegraphic interests and to the interests of the people. In non-archaeal countries the telegraph is a Government institution, and is used in the interests of the Government. That it would be so here there is little reason to doubt. The axiom that everything is fair in love, war and politics, would necessarily govern the administration of the telegraph, and the party in opposition would be deprived to a great extent of the benefit of telegraphic communication in any attempt to attain political supremacy.

This reason alone should be sufficient to prevent the

transfer of telegraphic management in the United States to Government control. Unpopular as the scheme for a Government telegraph monopoly in this country unquestionably is now, it will become more so as the people more fully realize the danger which would be incurred to their political rights by its adoption.

The true policy here, at all events, is to maintain the telegraph in its present independence of all political parties. Then, if the managers of existing lines should deal unfairly with the public, or exhibit partiality towards any party, the remedy is at all times within the reach of those who are aggrieved, in the establishment of competing lines; and the fact that the business is not, and, as has been abundantly demonstrated, cannot be made a monopoly, except by Congressional action, will prevent such abuses as have been suggested.

A Government telegraph must of necessity be a monopoly as the Post-office now is. Its principal officers and agents must be partisans, and appointed mainly for the reason that they are partisans, and will use their places and power for the advantage of their party. It has been claimed by some of the advocates of a Government telegraph monopoly that the telegraph administration will be exceptionally non-partisan, but the individual who credits this must be singularly ignorant of history or remarkably credulous. In the heated partisan strife which must exist most of the time in a Government constituted as is ours, a non-partisan administration of so powerful an agent by Government officials is an impossibility.

The very extensive use of the telegraph by both parties in the pending Presidential campaign, will demonstrate most forcibly the importance of keeping it free from political entanglement or control. It will add force and vigor to the arguments which have thus far sufficed to defeat the energetic and persistent attempts which have been made, and which will, no doubt, be renewed when Congress shall again assemble, to secure the transfer of telegraphic interests to Government management. It is to be hoped that in the next Congress few may be found who will be disposed to give countenance to any proposition for a Government telegraphic monopoly.

Mr. Pickett's Colossal Bust of Morse.

IN this time of photographs it is hardly possible for any one to die without leaving behind a multiplicity of likenesses, and especially is this true with those who have attained great eminence. Professor Morse was not an exception to the rule, for we have many photographs of him, and good ones, inasmuch as this mechanical art can make good likenesses. There are certain things, however, beyond the power of sun painting in the rendition of character, which belong only to the artist who is capable of so combining and arranging distinguishing traits of character, in due relation one to the other, as to realize in a statue, bust or painted portrait, qualities of mind and heart that the ordinary observer could only know through years of intimacy. Even the closest social relations with a great man, and simple, as was Prof. Morse, more frequently hinders than otherwise the forming of a just idea of those great and enduring qualities people in time to come will associate with the father of telegraphy.

It is rare, too, in these days, when mechanical excellence so often takes the place of genuine art, to find an artist with enough fine perception of character to see, and enough of trained skill to depict the depths of the heart, and the underlying principles of mind, which are as a key to the labors of a lifetime. When such a work is achieved it is beyond price; for it gives what nothing but art, and art of the highest kind, can give—at once the spiritual and physical attributes of a man.

Mr. Byron M. Pickett, to whom it would seem has fallen the task of perpetuating in bronze the memory of the great electrician, has, in a colossal bust lately finished, given us more, many more of those great qualities of portraiture than are to be found even in many of the best efforts of modern sculpture. It is fortunate for our fraternity, who knew (most of us) and all loved the man, that an artist of such sterling ability should have modeled from life studies this bust. It differs from the head of the same sculptor's statue in the Park, and from the other portraits he has made, because here he has given us the venerable old man,

marked not with the infirmity of years, but strong with life—with the fire that conquered, the earnest purpose, that endured without bitterness such trials as few men have suffered, and the greatness of humility, which bore with modest dignity such honors as few have known or earned. Through the simple but great humanity of the man has the artist made to breathe a sort of heroism, speaking to the heart rather than aweing the mind.

The whole land is a network of wires, attesting the genius of Prof. Morse, and around the world is a girdle. So his fame can never die, with this civilization at least—perhaps not at all—so long as things material shall exist. But we want something more than these; every city—for all are debtors to his genius and endurance—would honor their citizens by placing so enduring and excellent a tribute to his memory as is Mr. Pickett's bust, in some one of their public places.

An Address to Chief Operators and Others.

GENTLEMEN—It is for many reasons embarrassing to one who has any modesty to make an address to such an audience. Imagine yourself seated in a public hall, and I will "hem," "haw," and begin with a few of these reasons:

1st. It is apparent that upon each point a speaker may touch there is some one in hearing who better understands that point.

2d. There is probably, also, some listener who could better elucidate certain points.

3d. The sum total of knowledge in an ordinary audience is greater than that of the speaker upon the very subject which he treats. But it is probable, as a rule, that no one person in the audience so well understands the whole matter; and, moreover, their knowledge is not available, because it is scattered and fragmentary. It is well that the speaker feel all this, else his modesty will not be sufficient to free him of the spirit of dictation and superior intellect so frequently and uncomfortably observable in the delivery of many.

I am fully aware of all this. I meet this experience upon all sides in commingling with the craft, and so, feeling the truth, I hope I will not be regarded as one who seeks notoriety or applause.

I would ask you whether you think the pay and privileges of first class men are commensurate with the return you give?

By "first class men" I mean those of from eight to fifteen years' service—of good morals, good English education—who have been first class operators, and who have at no time committed acts against which the civil laws could take cognizance; who are thorough in all branches of the business—and this includes the many who could fill the position of the *chief* over them, should they be called upon to do so.

By "the return you give" I mean this, that you practically shut out yourself, in so long a service, from engaging in other work or profession.

Is it not true that as a mechanic, mason, store clerk, doctor, lawyer, etc., you would, as a rule, be better off in every way? All these offer constant advance, but with us the chances are infinitely less.

The spirit that actuates us toward the employer is the natural result of long continued non-encouragement of worth.

The first step must be taken by the employer. He stands towards the employé much as a parent to the child. The spirit of the child is ever a true copy of the parent. It is for the parent to look to and secure for the child his best good, and the child will not then fail to work for the best good of the parent. It is useless in the parent to say to the child, "work more for my interest and you shall not go unrewarded." It is example and not precept which influences. Precept, when backed by example, seems efficacious; but it is, after all, the example which is followed.

So long as the employer holds to this policy—"we will do by you as well as we are compelled to, and not an iota better," just so long will the employé hold to his way—"I will do just enough and just well enough to keep from being discharged, and not one bit more"—to use a common phrase.

This is the state of affairs to-day, and it has never been worse.

It is for you to constantly remind the employer of

this—to never cease urging a reform. There seems to me to be but one or two justifiable ways of procedure.

If the employers will not meet us to consult, investigate and determine, then we must meet among ourselves and see what can be done. If common average justice and fair dealing, if decent consideration cannot be had without it, then we must force a point, and use only the true steel of the profession this time to do it; and by this do not understand *strike*, for I do not mean that. There are other appeals to be found, and far stronger ones; but let us first exhaust our patience at impotency, and in the meantime let us secure as a subscriber to this paper *every operator*, in order that there may be concert of action in the muscle as well as in the brain.

Do not think we are weak, for a combination made up of all who are touched by this paper would be irresistible in means as well as influence. The whole country will back such a combination in any fair enterprise of telegraphy.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

EUROPEAN CORRESPONDENCE.

L. G. TILLOTSON & CO'S EUROPEAN LETTERS.

(First of the Series.)

The Society of Telegraph Engineers.

LONDON, July 27.

L. G. TILLOTSON, Esq.

In commencing my series of communications to you on telegraphic matters, I thought my first letter could best be devoted to giving you some details on one subject rather than on general telegraphic matters.

The newly formed Society of Telegraph Engineers may be said to represent all classes, electrically and telegraphically considered, and I really think that I cannot do better than to give you some account of the society, its aims and objects—what it has done and what it may be hoped to do. I am the more inclined to do this as you (when over here) especially asked for information on the subject; and also for the reason that the society has not as yet, so far as I am aware, been properly brought before the great body of telegraphers in the United States.

I have had forwarded to you several copies of the first number of the *Journal* of the society, and one has also been sent to the editor of THE TELEGRAPHER. This, with my present communication, will, I trust, thoroughly ventilate the matter—sufficiently so that the society may receive many recruits amongst our telegraphic cousins on your side of the Atlantic.

The copies of the *Journal* which I send you I shall be pleased to have you place to the best possible advantage, and, as far as practicable, with a view to circulation, so that they may pass from hand to hand. The *Journal* is supplied gratuitously to all members of the society—the subscription price, five shillings, being intended for non-members only.

As telegraphy increased in the United Kingdom the number of scientific men on the staff naturally increased, and with the daily advancement of science, and the increase in knowledge in telegraphic matters, those gentlemen connected with telegraphy became anxious for better means of intercommunication than already existed. The first attempt made in this direction was by the establishment of a class paper, which certainly accomplished a great deal of good, and afforded telegraphists a better opportunity of becoming acquainted with what passed around them. This paper did not last many years, and was succeeded by another, which faded away, to be succeeded by other similar publications at different times, with more or less vitality—generally less.

There has been, somehow or other, amongst our telegraphic folks in England, elements which are antagonistic to the successful carrying on of a technical newspaper; whether this is from too great warmth in discussion, and too great coolness when financial support is required, it is impossible for me to tell; but certain it is that whilst for years you have in the United States maintained a telegraphic paper, here we are entirely without one again. The natural consequence is that most of the scientific papers have more or less telegraphic matter in their columns, and the desire for electrical or telegraphic information means an expensive search. The same causes have doubtless prevented the telegraphic element here from banding together and forming themselves into a society. The formation of such a society has been recognised for many years as greatly desirable, but until lately all attempts at the formation of such a society have utterly failed.

The telegraphic body are, as a rule, widely scattered, and their chances of intercommunication are rare. They represent a large scientific body, and certainly ought to have a properly constituted institute; but few facilities have hitherto been afforded them. The Institution of Civil Engineers number among their members many who are engaged in electrical and telegraphic pursuits, and the institution have frequently offered premiums for papers on telegraphic subjects.

When any such paper has been read, it has been noticed that the meeting was usually better attended than any other during the session.

The great difficulty attending the formation of such a society was to obtain the services of a person of sufficient energy and patience to perform the initial services. This has been our great difficulty, and when that difficulty was overcome by the exertions—purely honorary—of Major Frank Bolton, another great obstacle was encountered in the supineness of telegraph men themselves. Many did not believe that such a society would live and succeed, and therefore held aloof; in fact there were plenty of excuses, plenty of promises, and but few active working men. Nothing daunted, however, Major Bolton set his shoulder to the wheel, worked energetically and unceasingly, and with such success that now the Society of Telegraph Engineers is generally acknowledged as filling a much desired want, and as established on a firm basis, and likely to last for many years—in fact, so long as telegraphy itself has an existence.

The Society of Telegraph Engineers has been established for the general advancement of electrical and telegraphic science, and more particularly for facilitating the exchange of information and ideas among its members. These ideas resolve themselves into a vast amount of work to be done; and it is impossible to foresee the advancement that electrical science may obtain through the formation of such a society. It is not too much to hope that committees of working members may be formed for conducting definite experiments for the elucidation of electrical laws, which may develop important results, and it is impossible to foresee what ideas hinted at by one member may not germinate in the minds of others, and bring forth valuable fruit.

In the meetings alone, forming a means of intercourse between the members, good has already resulted. It was pleasant, at such meetings, to note the expression of members suddenly coming across those they had not seen for years, perhaps, and who, had it not been for mutual interest in, and the meetings of the society, would probably have scarcely been likely to have ever met again. Faces here, there and everywhere, once well known, names, household words, one was glad to be introduced to. Indeed, the society may already be said to have done much good.

It is of course intended to bring matters of interest before the society in the shape of papers on technical points, but the following extract from the President's Inaugural Address will best explain this: "Problems of pure electrical science meet the telegraph engineer at every turn; the methods of testing insulated wire, of determining the position of a fault in a submarine cable under various circumstances, or of combining instruments so as to produce recorded messages by the mere fluctuation of electrical tension in a long submarine conductor, are problems worthy of the most profound physicist and mathematician. On the other hand, there is hardly a problem in electrical science that is not of practical interest to the telegraph engineer; and, considering that electricity is not represented at present by a separate learned society, ranking with the Chemical or Astronomical Societies, I am of opinion that we should not exclude from our subjects questions of purely electrical science. The phenomena of electrification and polarization; of specific induction and conduction; the laws regulating the electrical wave; the influence of rise of temperature on conduction, or the potential force residing in a coil of wire of a given form when traversed by a current, involve questions belonging just as much to pure physical science as to the daily practice of the telegraph engineer, and would at any rate be inseparable from our proceedings." There is much more to the same point, but time will not permit of making further extracts. Generally, however, the subjects for discussion before the society may be summed up as follows: All matters connected directly or indirectly with electricity and telegraphy; the society not confining itself to electric telegraphy solely, but considering and discussing in addition every possible form of telegraphy, such as visual or acoustic telegraphy, as used by the army and navy.

Up to the present time the papers read have been: On Automatic Instrumentation. By R. S. Culley, C. E., Engineer-in-chief Post-office telegraphs. Sea Telegraphy. By Captain Philip Colomb, R. N. On the Colmar Calculating Machine, as applied to Electrical Computation. By Mr. Warren. Military Telegraphy. By Captain Malcolm, R. E. On several new features connected with the Wheatstone Bridge. By Professor Forster, F. R. S. Torpedo Firing and Testing. By Major Stothard, R. E.

The last meeting of the society was followed by a most successful *soirée*, given by the President, Mr. C. W. Siemens; and within the last few days we have had a big affair at the Royal Albert Hall, given by the request of Her Majesty's Commissioner, which proved and unqualified success. A lecture on the Rise and Progress of Telegraphy was given by Dr. W. H. Preece, C. E., followed by an exhibition of electrical telegraphic apparatus, historically considered, the finest collection ever yet brought together.

Looking back at the close of the society's first session, members congratulate themselves at having passed the Rubicon. The few members with which the society commenced have, within a brief period, increased threefold in numbers, and fresh candidates are constantly applying for admission. Our list of members already contains the names of those best known con-

nected with the profession. We are at present but slightly represented in the United States, solely from the nature of the society and its advantages being so little known. It is hoped that when the objects of the society are better understood, that we shall have a large list of transatlantic members from among the numerous and intelligent body of American telegraphers.

The publication of our proceedings, in the form in which you will receive them will, doubtless, contribute materially to this result.

The Great Question for Consideration.

TO THE EDITOR OF THE TELEGRAPHER.

You cannot imagine how much good your editorials do me—how round and full an echo they find in my heart. Your arguments will tell; do not cease—do not think they are without effect. The apathy of our corporations, the death-like sleep of that better spirit which must be awakened in the bosom of every old, practical telegrapher—these seem insurmountable obstacles to the advancement of our welfare. But despair not, for there is no substance which will not yield to constant hammering, no slumber which cannot be broken.

The great question of the day is whether it is possible to improve our condition by and with the hearty co-operation of the managers. Will they meet us and investigate with us this momentous question?

They are cordially and repeatedly invited to call our leading men to them, to the end that it might be known how far the views of each are mutual; and it is a pity for the shareholders that at least a yearly convention is not held, for it could not otherwise than result in profit to them, no matter what might be the ostensible object, so long as it were a meeting of the employer and employé.

The day is past for talking of impractical unions, leagues, etc. The mind of the fraternity has settled down to a better basis. It would now be quite impossible to revive it. This is good, and it is a token of determination. It is the quiet man who resolves well and does not take his shoulder from the wheel after it has once been put there.

The organ of the great company is a constant indicator to this fact, that the good will of the profession is fast becoming alienated. It calls to us in every issue, it preaches well, it moralizes elegantly, and it truly represents a management which is unfair, which is deaf to appeal, and which practices none of the virtues which we are invited to imitate.

Behold the few hundred trusty, skilled, intelligent men who hold the very destiny of the company in their hands, whose thorough acquaintance with every matter in their several localities is the sum total of the little system and success which exists; they have given up the flower of their life to the service, and what is their reward? What is it still holds them? Hope, gentlemen, hope; nothing more tangible than this.

While in value men go on increasing if nothing more than hope spurs them on in recompense, they come to a dead stand still twenty years before their best maturity. The policy of the management deadens all ambition beyond this limited incentive.

The greater part of the executive ability and practical management of the every-day business of the company lies in the hands and brains of these few hundreds. They deserve, and must have better treatment from the company.

If youths of sixteen to twenty, because they can send and receive fast, are worth ninety dollars a month, then men who guide and utilize this young help are worth two or three hundred. Without the latter's experience and judgment the former would, at all times, be of far less value than they are. The old, experienced and skilful hand not only does solid work himself, but gets solid work out of many who otherwise would render but very flimsy, unprofitable services.

To such as feel that these remarks apply to them, I would respectfully suggest that if we cannot attain to suitable recognition and intercourse, so as to have a voice in the management, let us convene and interchange views among ourselves.

I have made the telegraphic business a life service, and the future of the worthy must be made brighter or I must drop it forever.

I cannot breathe with comfort and be a willing party to the perpetuation of the existing policy, even so far as to give the concern my services. If it will not move forward, or let us move forward, the sooner we stamp out the falsely inspired hope and stand on our own bottom the better for us.

The *Journal of the Telegraph* has reduced its subscription to one dollar per annum. The company furnishes every W. U. office with at least one copy, and it is the company's interest, and only to the company's interest, that every one of its employes read the paper.

It may get subscribers *outside* of its own ranks, but if it secures any *inside*, the meanness of the company in accepting their money can only be equalled by the stupidity of the employé.

THE TELEGRAPHER, thank God, is rapidly spreading its reaches on all hands. It will not be long before as many offices are lit up with its cheerful countenance as are made gloomy by the insidious organ of the great company.

H. C. H.

Metallic roofs render lightning rods superfluous.

Personals.

Mr. M. H. REDDING, formerly the manager of the Bankers and Brokers' Telegraph Company in this city, has been appointed manager of the Western Union New York Stock Exchange office, in place of Mr. JOHN HORN, Jr., whose resignation has already been announced. This is an excellent appointment.

Mr. J. J. FREY, until recently chief train despatcher of the Missouri, Kansas and Texas Railway, has been promoted to be superintendent of the Osage Division of that road (Holden, Mo., to Paola, Kansas). Mr. FREY has risen rapidly from the position of telegraph operator, and is now but 24 years of age.

Mr. W. H. DAVY has resigned his situation on the night force of the Western Union Chicago, Ill., office and accepted a position with the Pacific and Atlantic Co., at Dubuque, Iowa.

Mr. H. M. GOWEY, of the Chicago, Ill., Western Union office day force, and Messrs. F. M. HASTER and C. S. JOHNSON, of the night force, same office, have accepted positions in the Omaha office of that company.

Mr. G. W. HUDDLESTON, of the Western Union, Chicago, Ill., night staff, has resigned, in order to devote all his time to his business as real estate agent.

Messrs. E. S. SWIFT and Wm. S. MANNERS have accepted positions on the day staff at the Chicago, Ill., Western Union office.

Mr. D. McD. HALL has resigned his situation as agent of the Northwestern Press Association at Chicago, Ill., and accepted a position on the day force of the Western Union Company, in that city.

Messrs. D. KRARNKY, E. G. JOHNSON, E. B. LUDLOW, R. D. WILLIAMS, P. McKEVER and EDWARD LOMASKEY have recently accepted positions on the day force of the Chicago, Ill., W. U. office.

Mr. E. O. WAITS, formerly superintendent and manager of the A. & P. Co., at Chicago, Ill., has accepted a position with the Western Union Co. in that city.

Mr. E. J. WATERHOUSE has been appointed agent and operator at Pleasant Hill, Missouri, station of the Missouri Pacific R. R.

Miss MAGGIE PRACOCK has been transferred from Pleasant Hill to Washington, Missouri, station of the Missouri Pacific R. R.

Mr. WILL TURNER has resigned his position at Machine Shops, "M. S." office, St. Louis, Mo., on the Missouri Pacific R. R.

Mr. W. L. RINGLAND, of Waveland, Ind., is extra operator in train despatcher's office at Sedalia, Mo., of the Missouri Pacific R. R.

Mr. E. T. PENNINGTON, who has for the past six years been operator at Warrensburg, Missouri, of Missouri Pacific R. R., has been appointed agent and operator at the same place.

Mr. G. MILLS, formerly of Wellsville, Allegany County, N. Y., has accepted a position in the Boston, Mass., Western Union office.

Judge PALMER, Secretary of the Western Union Telegraph Company, has returned from his recent European trip, on which he has been absent several months. He went abroad for his health, which has been greatly benefited by the trip.

Mr. FRANK KEENE (not KANE, as erroneously printed in our last number) has been appointed manager of the Brooklyn, N. Y., office of the Atlantic and Pacific Telegraph Company.

Miscellaneous.

ELECTRIC LIGHT.—The Alliance Company at Paris are now manufacturing improved magneto-electric machines for the electric light. These are now made with four disks, and supply from 230 to 300 carcel jet burners with a speed of 350 revolutions per minute, and driven by a 2½ horse power steam engine. The machines certainly seem expensive, costing £320 each; but it is estimated that thereby the combustion of a few pounds of charcoal gives an illuminating effect equal to that of 25 pounds of colza oil. This mode of illumination, therefore, is ultimately inexpensive, especially when applied on the large scale, for ships, large halls, light-houses, etc., for which it is well adapted; and we shall, no doubt, soon hear of new applications of the invention.

A new and very powerful thermo-electric battery has been invented by Noe, of Vienna. The alloys used are as yet kept secret. It is stated that ten of the elements of this battery are equal to one Daniell cell, and twenty equal to one Bunsen cell. Seventy-two elements arranged for intensity decompose water rapidly; two series of thirty-six each operate a Ruhmkorff coil, and four series of eighteen produce powerful electro-magnets.

It is mentioned as a curious fact, by old woodsmen, that the beech and sycamore trees are never struck by lightning, though found in close proximity to oak, hickory, and trees of other species that have been seamed or torn to pieces by the subtle fluid.

The Telegraph.

The New Western Union Building.

THE old buildings at the corner of Broadway and Dey street, upon the property purchased by the Western Union Telegraph Company for the site of their new and magnificent telegraph building, have been pretty much cleared away, and excavating for the cellar for the new building is in progress. The plans and contracts for the building are completed, and it will be pushed ahead as rapidly as may be necessary. The site is a most excellent one, and when completed the Western Union Company will have the most extensive and magnificent telegraph offices and accommodations in the world. In addition to the room occupied by the company there will be considerable space to rent for offices, and it is believed that the rents received will nearly if not quite pay the interest and taxes on the large investment.

The investment will, without doubt, prove to be a judicious and profitable one, and we shall watch the progress of the building with interest until its final completion and occupation.

Foreign Telegraphic Notes.

THE total number of messages forwarded from postal telegraph stations in Great Britain during the week ending 20th July, 1872, was 304,853—an increase on the corresponding week of last year of 57,936.

Mr. Richard Herring's telegraph printing instrument was not exhibited at the Albert Hall exhibition, because that the invention is under the consideration of Sir W. Thomson and Prof. Fleeming Jenkin, to whom it has been jointly referred by Mr. Scudamore and Mr. Herring, to test its practical value.

The Telegraph and the Presidential Election.

THE free use of the telegraph for the reporting of important speeches to distant localities increases the general interest in our national politics, and tends to bring about a greater uniformity of opinions. For instance, Secretary Boutwell delivers a speech in North Carolina, and the next morning it is reported in full in our morning papers. There is the same promptness in reporting Senator Fenton's speech at Albany. Both are upon the financial issues of the campaign. Both go before the country at about the same time, and present both sides of the case—not to a limited constituency, but to millions of readers. So this morning a long and elaborate speech, made by Carl Schurz last evening at St. Louis, is reported as fully in our city journals as though it had been delivered at Cooper Institute. To-night Senator Conkling speaks here, and his speech will be read to-morrow by those who heard Senator Schurz last night.

Thus, no matter where, or what, or how large the local audience may be, all of the first class efforts of the campaign are really addressed to the readers of newspapers all over the country. The contest loses much of its narrowness by this very fact. A speaker who feels that he is addressing a nation is not so apt to descend below the higher levels of controversy. The arena is too large, and mere local issues and petty personalities sink into their proper insignificance.

The vast constituencies that are now addressed through the aid of the telegraph ought to produce an elevating and enlarging effect on the speakers themselves, while the people, who read first class speeches instead of listening to bitter and commonplace harangues, must be immeasurably benefited by the reading of the able speeches on both sides that are of sufficient importance to be reported by telegraph. They find the questions of the day handled with breadth and vigor, and become interested in discussions of the principles of our Government. Only what is strongest and best in the great speeches sinks deeply into the popular consciousness. The froth and scum of debate are transitory and soon forgotten.—*The New York Evening Mail.*

To our Telegraphic Friends and Correspondents.

WE would again remind our telegraphic friends and correspondents that, in order to make THE TELEGRAPHER of interest to all sections of the country, and what we desire and intend that it shall be, a full and complete record and compendium of telegraphic intelligence and information, we rely very much upon their assistance and coöperation. Any information in regard to telegraphic matters, the projection and construction of new lines, additions to and extensions of existing lines, consolidations of lines and companies, increase of facilities, etc., are always welcome. We desire also to keep our readers posted, through our Personal column, in regard to the promotion, movements and location of telegraphers. We also desire to be kept informed in regard to the railroad telegraphs and telegraph employes throughout the country, as this branch of telegraphy has reached proportions and an importance which insures its recognition as a leading and interesting department of American telegraphy. Communications are also welcome discussing topics which may interest the

telegraphic fraternity, relating novel experiences of telegraphers, and imparting practical information on electrical and telegraphic subjects. It should be remembered that THE TELEGRAPHER is the organ and representative of the telegraphic fraternity, and not of any company or telegraphic combination, and that in coöperating with us in the work of maintaining its value and interest as a telegraphic journal, our correspondents are advancing their own interests, and making the paper more powerful to aid them in securing recognition and establishing their just rights.

Prosperity of Telegraph Lines.

WE are gratified to learn that the several telegraph companies continue to enjoy a very satisfactory amount of business, and that their facilities are very fully and profitably employed. The amount of business for July was considerably in excess of that usual during the summer season, and August promises to be a very good month telegraphically. The Presidential election furnishes a very large business to the telegraphs of the country—much more so than any previous one, as it has been productive of lengthy communications, speeches and manifestos, whose importance necessitates their transmission by telegraph all over the country. The transmission of election returns, etc., also tends to increase the use of the telegraph and the receipts of telegraph companies. General business for the fall months promises fairly, and the public, especially the business public, use the telegraph more and more freely every year. Altogether telegraphic prospects are very good, and telegraph property is increasing in value.

A Novel and Original Idea.

Mr. L. G. TILLOTSON has received specially a publication, in which is given the first mention of the DANIELS cell, which is artistically illustrated. Any telegrapher desiring to examine it will be welcomed and enlightened, at No. 8 Dey street, by Mr. TILLOTSON. Call and see it.

New Patents.

For the week ending July 16, and bearing that date.

No. 129,000.—ELECTRO-MAGNETIC MOTOR.—José S. Camacho, Habana, Island of Cuba.

A combination of a wheel containing a series of electro-magnets, that have an unvarying direction of electric current, with a series of stationary electro-magnets, in which the direction of the current is reversed at regular intervals. By the changed polarity of the stationary electro-magnets their respective power of attraction is so changed that the wheel magnets will follow such transmission and rotate the wheel.

1. The magnets D, arranged upon a rotary wheel or ring, B, and wound with conducting wires in reverse directions, alternately, so that the poles of each magnet will be of opposite polarity alternately, and the magnets E arranged upon the stationary rings A so as to be in the same horizontal plane with the magnets D, and connected into pairs, around which the conducting wires are wound in reverse direction alternately, all arranged to operate as herein shown and described.

2. The vibrating lever G, carrying the pins i and the arm L, and arranged in combination with the pins p, g, conductors r, pins t, u, conductors s, and with the notched wheel H, to operate substantially as herein shown and described.

3. The electro-magnets, composed of the concentric graduated cylinders w, w', etc., with a coil around each, as set forth.

No. 129,085.—COMMUTATOR FOR ELECTRO-MAGNETIC MACHINES. Victor Barjon, New York, N. Y.

The relative lengths of the metallic and non-conducting surfaces are made adjustable by position of circuit closer on the commutator.

1. A commutator for an electro-magnetic engine, composed of a conducting ring, A, with V shaped spurs, C, the spaces between which are occupied by non-conducting filling pieces, D, substantially as shown and described.

2. The combination, with a commutator constructed as described, of a positive spring, E, bearing on the ring A, and two negative springs, F, F', bearing on the spurs C and filling pieces D, substantially as and for the purposes set forth.

No. 129,148.—GALVANIC BATTERY.—Carl A. Linke, Pittsburg, Pa., assignor to himself, Traugott Frenzel and Henry W. Oliver, Jr., same place.

Introduces a jet of steam directly against the carbon in the battery for the purpose of increasing the power.

1. Introducing a jet or jets of steam into the cup or cell of a galvanic battery, substantially as set forth.

2. In combination with a battery or cup, or cell, B, a steam jet pipe, a, leading from a steam generator to the cell or cup of the battery, substantially as described.

3. The combination of battery B, steam generator D, and water tank g, connected and insulated, substantially as and for the purposes set forth.

No. 20,970.—AN IMPROVED ELECTRO-MAGNETIC HOUSE ALARM. Granted to William Whiting July 20, 1868.

The improved house alarm hereinbefore described, consisting of a combination of the following elements, viz: first, a series of electro-magnetic circuits; second, an indicator, to designate the respective circuits; third, an alarm apparatus; fourth, the window or door springs; the whole operating, as set forth, to sound the alarm and indicate the circuit attacked.

Recent British Patents.

No. 2,286.—G. Little, Rutherford Park, New Jersey, U. S. ELECTRIC TELEGRAPH APPARATUS AND OTHER CIRCUITS. Dated August 30, 1871.

Copies of messages are left at different stations by dividing the electric current, directing part through the receiving instrument at each station, from which it passes either to the earth or goes on by the wire, a resistance or "rheostat" causing the division of the current. The batteries are arranged so that when the transmitting circuit is broken the batteries neutralize each other and clear the line of surplus electricity. Also, means for transmitting by perforated paper, and a recording instrument or pen supplied with ink from a fountain.

THE TELEGRAPHIC FRATERNITY.

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, - - - - - Publisher and Editor.
FRANK L. POPE, - - - - - Associate Editor.

SATURDAY, AUGUST 10, 1872.

The Relations of Telegraphic Capital and Labor.

THE dissatisfaction and discontent which characterize the relations of capital and labor generally are not, as our readers know, entirely lacking, as between capital and the employes engaged in telegraphy. For want of unity of action on the part of telegraphic employes this has not of late been so prominently brought to notice as heretofore, but it exists nevertheless. It is not safe for telegraph employers and managers to ignore the fact, for it is liable at any time to take shape and organization, which may exert a most unfavorable influence on telegraphic interests. An ounce of prevention has always been held to be better than a pound of cure, and in nothing is this truer than in the just causes of complaint which telegraph employes have against their employers.

We do not wish to be understood as holding that the justice and right is all on one side, by any means. All telegraphers are not perfect, either personally or professionally, and there are some who are disposed to render only eye service in return for their salaries, and these are apt to be the loudest and most persistent in their complaints of unjust and unfair treatment. Such telegraphers are not a credit to the fraternity, and are certainly no advantage to it. They serve to bring into disrepute the efforts of those who are striving, loyally and honestly, to bring about a better state of affairs between the employers and employes. We have one such in our mind now, who is still employed in a New York office, whom it would be doing too much honor to name in *THE TELEGRAPHIC FRATERNITY*, that here and elsewhere was foremost in stirring up strife and difficulty, but when the trial came, basely went back on his associates, and reaps the reward of his treachery in the unconcealed contempt not only of his professional associates, but also of those who, for the sake of example, continue to employ him, and furnish him the means of sustaining his worthless existence. That they would rejoice to be rid of him we know, but as his power for mischief is gone—no telegrapher now placing confidence in his word or coöperation—they continue to employ him rather than incur the reproach of profiting by his treachery and then leaving the traitor to his deserved fate. Such men have injured the fraternity most grievously, and in the future it is to be hoped that they and such as they will be carefully avoided. They should be practically ostracised, as the noisome example to which we have referred is by his professional associates, and held up to general despic and contempt.

Those who are honestly and earnestly laboring to elevate the fraternity seek to do so by establishing better and more cordial relations between employers and employes. They acknowledge and recognize the equities on both sides, and the fact that the real interests of both sides are reciprocal. One cannot permanently prosper without the other participating in that prosperity, and it is their aim to secure the greatest possible amount of prosperity to all concerned.

We have so often pointed out the way in which this can be best effected, that it would seem as though our readers would become almost as weary of reading as we sometimes are of writing it. Yet we are often encouraged to believe that the seed sown does not all fall on stony ground, but that after a time some of it may spring up and bear fruit. If it does, we shall rejoice that our labor has not been in vain. We earnestly desire that a better condition of affairs may be inaugurated, and that telegraphic employers and employes may come to some understanding which shall advance the real welfare and interests of all concerned. We believe that this can only be done by concert of action between them. A full and free consideration of the difficulties and misunderstandings, conducted in a friendly and mutually conciliatory manner, could not but result advantageously.

It is not merely the question of salaries which requires adjustment. The regulation and classification of positions and employes, the adjustment of hours of labor, etc., all require consideration, revision, and arrangement upon some system which shall be mutually just, and should be mutually satisfactory. The right persons should by some means be assigned to their proper positions and places, and not, as is too much the case at present, be placed as favoritism or temporary exigencies may chance to dictate.

To effect this concert of action there must be some kind of an organization of the fraternity. It is not for us to say what this organization shall be, but to be effective it must comprise the major and most intelligent portion of the telegraphers. There should be at least once a year a convention of the representatives of the fraternity of the whole country, and they should meet to calmly consider all the questions which affect the important and rapidly increasing number of those engaged in telegraphy. Such an organization should have as its fundamental principle not hostility to telegraph companies and employers but a desire to coöperate with them for the greater good of all.

The managers of telegraph companies should be invited to confer with the representatives of this organization, and unite with them in establishing a system which should govern in all matters between the two. Means should be taken to insure faithful service and discharge of duties on the part of employes, and those who should fail in rendering such service should be marked as enemies to the fraternity, and cut off from recognition, and, as far as possible, from employment.

We are aware that all this will take time to accomplish, but we have faith to believe that it is not impossible. It is admitted generally that *something* should be done. Can anybody suggest anything better? It is useless to talk of strikes, for the telegraphic fraternity could not be brought to another general strike for many years to come—neither is it desirable that they should be. Strikes are at best but a clumsy and ineffective weapon, and should be discountenanced in this country, at all events. They are justified only as war in any shape is justifiable, as a last resort to correct evils which are unendurable, and which cannot otherwise be reached.

It would be for the interest of the managers of telegraph companies to encourage rather than oppose such an organization as we have hastily sketched. Improvement, such as might be effected through it, could not fail to render telegraphs more remunerative and telegraph property more valuable. With united and harmonious action the telegraphs of the country could be made, in their administration and operation, as far superior to what they now are as the full light of day is to the dim light of the early morning. It might compel the retirement to private life of some old foggy Bourbon managers, but that would be no cause for regret on the part of any one who has the interests of the telegraph and telegraphic fraternity at heart.

Our European Correspondence.

WHEN recently in Europe our esteemed friend, Mr. L. G. TILLOTSON, made arrangements with an able and experienced writer to prepare for him a series of letters on electrical and telegraph matters. The first of these communications has just been received, and we are indebted to him for kindly furnishing it to us for publication in *THE TELEGRAPHIC FRATERNITY*. It appears in another column, and will no doubt be read with much interest by American telegraphers and electricians. It furnishes a clear and succinct account of the formation of the Society of Telegraphic Engineers in London, which has already been recorded in this paper, and of which our associate Editor, Mr. F. L. POPE, is an honorary member. The difficulties encountered in establishing a telegraphic organization there will read familiarly to those who have had a hand in attempting to establish an organization of telegraphers in this country. The character and objects of the English organization, it should be stated, are different from that of any which has been attempted in this country. A telegraph engineer, in the English acceptance of the term, is not professionally a telegraph operator—which there constitutes a separate, distinct, and professionally much inferior class. The objects of the Society of Telegraph Engineers are mainly of a scientific character, and it already numbers among its members most of the lead-

ing electrical and telegraphic scientists of Great Britain.

We are pleased to hear of the prosperity of this organization, for, as the writer states, it is calculated to accomplish much good. We hope to have frequent contributions to our columns from his able pen, through the kindness and courtesy of Mr. TILLOTSON.

The Pennsylvania Railroad and Brooks Insulator.

ON the representations and recommendation of the Superintendent of the Western Union Telegraph Company, the General Manager of the Pennsylvania Railroad was induced to discard the BROOKS Paraffine Insulator then in use on the telegraph lines of the road, and adopt glass insulation, and issued an order to that effect on the 12th of July, 1870. For nearly two years the glass insulators were tried but with most unsatisfactory results.

On the 26th of July last he issued another order, revoking the one above referred to, in which he states the above facts, and that about a year since a SIEMENS galvanometer was placed at Altoona, and careful tests have been made of the relative insulating properties of the BROOKS and glass insulators. The tests show so great a superiority of the BROOKS that it is again adopted as the standard, and will hereafter be exclusively used for repairs and new work.

It should be understood that the tests referred to were in comparison with the old BROOKS insulators in use for years, which are very much inferior to the improved patent insulator now made by Mr. BROOKS, and the difference between them and the glass will be far greater than anything before used on the lines of the road.

We are informed that Mr. BROOKS has already received a considerable order for his insulators from the road, which he is now engaged in filling.

We congratulate him upon this vindication of his insulator, and its restoration to favor with the intelligent managers of the Pennsylvania road. The action of that road has been constantly cited by the advocates of glass insulation as an argument against the superiority claimed for the paraffine insulator, and we hope that they will be as prompt to concede the credit which its restoration, after a thorough trial of glass, entitles it to.

The Pennsylvania Railroad is fortunate in having for managers of its telegraph department gentlemen of ability and experience in electrical matters, who are not governed by old foggy notions and prejudices, and who are not afraid to submit to actual test the relative merits of telegraphic and electrical inventions presented for their consideration. Galvanometers are in favor on that road, which is fortunate for Mr. BROOKS, whose insulators are meeting with the general approval of intelligent electrical and telegraphic experts, notwithstanding the factions and stupid opposition of General Superintendent ECKERT, Division Supt. BATES, and certain other officials of the Western Union Company.

The Western Electric Manufacturing Company.

ATTENTION is called to the card of Messrs. GRAY & BARTON, of Chicago, Ill., in our advertising columns, announcing the transfer of their works and business to the Western Electric Manufacturing Company, and to the circular of the new Company, of which Gen. ANSON STAGER is President. This company have, in addition to the works of GRAY & BARTON, purchased the Western Union Telegraph shops at Ottawa, Ill., and have largely increased their manufacturing facilities in addition, and are prepared to carry on the manufacture and sale of telegraph instruments and supplies on an extensive scale. The new company now has unsurpassed facilities for the business for which it was established, and will promptly fill orders confined to it. The enormous demand which the rapid increase and extension of telegraphs in this country has created, insures full and profitable employment for even such extensive facilities as are possessed by the new company, and will, no doubt, tax them to their full productive capacity.

Mr. LENZ has discovered that iron and copper deposited by galvanic action contain gas, principally hydrogen. He has found that the iron sometimes absorbs as much as 185 times its own volume of that gas.

220 EAST KINZIE STREET,
CHICAGO, July 15th, 1872.

DEAR SIR: The undersigned tender sincere thanks for the liberal patronage bestowed upon the firm of GRAY & BARTON since it has been in business, and bespeak a continuance of the same in favor of the Company which succeeds us.

THE WESTERN ELECTRIC MANUFACTURING CO.

has been organized for the purpose of carrying on the manufacture of Telegraphic and other Electrical Instruments. It has purchased our shop and tools, and is continuing the business on a more extended scale.

Respectfully,
GRAY & BARTON.

THE WESTERN ELECTRIC MANUFACTURING CO.

DIRECTORS.

ANSON STAGER. ENOS M. BARTON.
ELISHA GRAY. THOMAS ORTON.
STAFFORD G. LYNCH.

ENOS M. BARTON, Sec'y. ANSON STAGER, Pres't.
ELISHA GRAY, Sup't. B. G. LYNCH, Vice-Pres't.

This Company having purchased the shop, tools and business of GRAY & BARTON, in Chicago, and of the WESTERN UNION TELEGRAPH COMPANY, at Ottawa, Ill., is now prepared to carry on the manufacture and sale of

TELEGRAPH INSTRUMENTS AND SUPPLIES

upon an extensive scale. We have made large additions in the way of tools and facilities for manufacturing, and have spared no pains to make our establishment the most complete of its kind in the country. We shall soon have in stock a large amount of all the standard Telegraph Instruments, of the best quality and workmanship, and shall be prepared to execute orders for the manufacture of articles which we do not keep in stock. We respectfully solicit the patronage of all who desire standard or special instruments in our line of manufacture.

We shall have also a full assortment of WIRE, INSULATORS, OFFICE WIRE, BATTERY MATERIAL, and all descriptions of TELEGRAPH SUPPLIES.

Respectfully,

THE WESTERN ELECTRIC MANUFACTURING CO.,
220 East Kinzie Street, Chicago.

PICKETT'S STATUETTE OF PROF MORSE.

F. L. POPE & CO. have arranged with Mr. BYRON M. PICKETT to receive orders for his

ELEGANT MEMORIAL BUST

OF THE LATE

Professor S. F. B. MORSE.

The Bust may be seen at our office, 194 Fulton Street, New York. Price, \$4. Sent, C. O. D., if requested.
Address, 194 FULTON STREET. P. O. Box 6010.

16,000 MILES

OF

"JOHNSON'S" WIRE

USED BY THE

TELEGRAPHS OF THE UNITED STATES

DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
MANCHESTER, ENGLAND.

Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

TELEGRAPH LINES

OF ANY LENGTH FULLY EQUIPPED WITH

WIRE, INSULATORS, BATTERIES,
INSTRUMENTS, ETC.

L. G. TILLOTSON & CO.,

No. 8 DEY STREET,

NEW YORK.

Sole Agents for "Johnson's" Wire.

" " " American Compound Wire.

" " " Cauvet's Patent Screw Insulators.

" " " Sam'l O. Bishop's Insulated Wires and Cables.

" " " Brooks' Patent Paraffin Insulators.

Manufacturers of every description of

TELEGRAPH APPARATUS.

AMERICAN FIRE ALARM AND POLICE TELEGRAPH.

GAMWELL & CO., Proprietors,

104 CENTRE STREET, NEW YORK.

J. W. STOVER,

General Agent and Superintendent.

L. B. FIRMAN, Chicago, Ill.,

General Agent for the West and North West.

J. R. DOWELL, Richmond, Va.,

Special Agent for Virginia and North Carolina.

J. A. BRENNER, Augusta, Ga.,

Special Agent for Georgia and South Carolina.

L. M. MONROE, New Canaan, Conn.,

Special Agent for New England.

THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

Albany, N. Y.,
Allegheny, Pa.,
Boston, Mass.,
Bridgeport, Conn.,
Buffalo, N. Y.,
Baltimore, Md.,
Chicago, Ill.,
Cincinnati, Ohio,
Columbus, Ohio,
Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
Washington, D. C.,
Worcester, Mass.

The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

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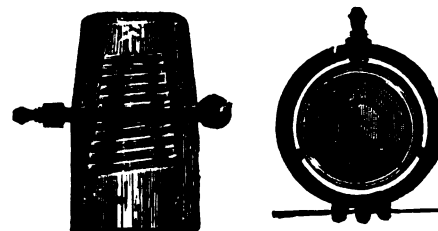
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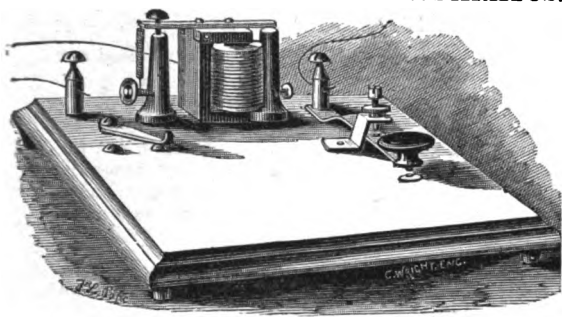
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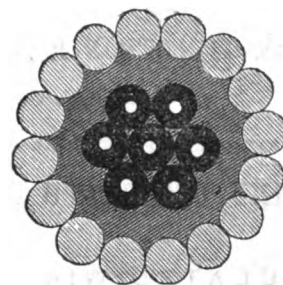
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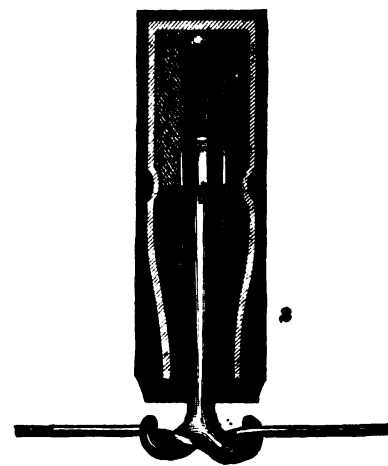
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The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 52.

New York, Saturday, August 17, 1872.

Whole No. 318

Original Articles.

On the Advantages of Scientific Education.

We have received, through the courtesy of the author, a lecture "On the Advantages of Scientific Education," addressed to the Telegraph Staff of the Postal Telegraph Department of Great Britain, by Mr. William Henry Preece, Member of the Institute of Civil Engineers, Society of Telegraph Engineers, etc., and Engineer of the Southern Division of the Postal Telegraph Department, which has been printed for private circulation.

This lecture, which sets forth in a simple but forcible manner the advantages and desirability of a more general and thorough knowledge of the scientific basis of the telegraphic art, by those who are engaged in its every day practical administration, was delivered as preparatory to a course of lectures which were about to be delivered upon the science of electricity, and to induce the practical telegraphers to devote more time to the study of the scientific principles upon which electricity is based.

It has been one of the objects of THE TELEGRAPHER to induce among the telegraphers of this country a more general and thorough study and knowledge of the principles and facts of electrical science, in order that telegraph operators might be something more and better than mere mechanical manipulators of telegraphic machinery. We propose to give a *résumé* of this lecture, with such extracts as our space will permit, and in so doing are confident that we render an important service to the telegraphic fraternity in this country.

In the introduction to his lecture Mr. Preece thus clearly defines the difference between an *art* and a *science*: "There is great difference between an art and a science; an art teaches us to do, a science to know. The object of science is knowledge; the objects of art are works. In art truth is a means to an end—in science it is the only end. Thus, in our profession, the truths of Electricity and Magnetism have been the means by which the Art of Telegraphy has been established.

"You are proficient in the art but deficient in the science. I hear some of you say, 'We are proficient in the art—why bother us with the science?' I will show you why."

The lecturer then proceeds to adduce and illustrate, under several heads, the advantages of a higher standard of scientific knowledge to the practical telegrapher. The first advantage is the *pleasure which it affords*. "How many a fact has passed beneath the eye of the stone breaker which the geologist would have given years of his life to have known. So with the botanist and the ordinary laborer in the field. So with the lineman or the operating telegraphist—the effects of earth currents, atmospheric electricity, and of induction, are constantly passing beneath his eyes. He observes much the scientific telegraphist would have given anything to have witnessed. There is a pleasure in tracing effects to their cause, and distinguishing the one from the other. 'Contacts,' 'disconnections' and 'earths' are constantly occurring. The mind trained to knowledge follows such effects to their cause at once. The ignorant regards them with the same feeling as the animal which cowers under a hedge during a thunder storm. The one has the excitement of the hunter and the pleasure of the seeker after truth, the other remains callous and unconcerned."

The lecturer considers that the reasons why scientific study is so little popular are that it does not appeal directly to our senses, involves time and study, and because people do not like trouble. "There is, unfortunately, no royal road to learning. Knowledge is fixed at the top of a hill which requires some stiff climbing; hence, science is unpopular."

"A scientific man is one who knows, and one who derives pleasure from that which he knows; hence, the chief advantage which I lay before you to be gained by the study of the scientific part of your profession is—*pleasure*."

The second advantage which is held out as an inducement to telegraphers to apply themselves to science, is the improvement that it will effect in their professional standing and position. The knowledge of the mechanical portion of the profession is not sufficient.

"Mr. Culley has said, 'What would be thought of

an engine driver who stuck on a bank for the want of knowing how to use sand on the rails?' Such, I am sorry to say, is the position of the great majority of those who are employed in the operating branch of our department."

"Scientific training is much cultivated on the continent. I do not know that foreign telegraphists are better than English ones, but I do say that English ones, with training, must come to the front; for that self-reliance, perseverance, energy and presence of mind which are the distinguishing characteristics of the Anglo-Saxon race, must, with training, place English telegraphists in the front rank. All

future appointments to the principal posts in the British Postal Telegraph System must fall to those who have gained a reputation by their studious habits, observation and attention to the technical details of their business."

The third advantage, as set forth by the lecturer, is that a knowledge of the technical details of telegraphy will eventually lead to an improvement in the compensation and emoluments of those employed in telegraphy. The Telegraph Department propose to establish schools at important stations, to assist those who are anxious to acquire this technical education, and, in fact, this has already been done at Southampton. Promotion from one class to another will be made dependent upon the certificates of proficiency from these schools. "In fact, it is proposed that all those in the service shall comprehend, as a portion of their duties, the connections and construction of their instruments; that they shall be able to join up" [i. e., put in circuit] "these instruments; and that they shall possess the ability to detect and remove faults in their apparatus and batteries. It is also intended to establish two grades, and that those who enter these will be required to pass through a certain examination."

The first grade will include those who, in addition to the knowledge indicated above as being required by them in the ordinary discharge of their duties, can localize faults, understand the construction and use of the testing boxes, tangent and ordinary galvanometers, and have some knowledge of the elementary principles of electricity and magnetism. The highest grade—in addition to all that precedes—will be required to understand thoroughly the higher classes of apparatus, and to pass an examination in the principles of electricity and magnetism."

Education itself is the fourth advantage adduced by the lecturer as an inducement to the telegraphic fraternity to seek scientific knowledge in connection with telegraphy. "The object of education is to attain precision of thought, and to possess the power of drawing correct inferences from facts—indeed, to exercise judgment and common sense. There is no better method of acquiring these valuable qualities than by a scientific training. We can find out many things without scientific training—trace faults, &c.; but we can do such things more quickly, more correctly, and with more gratification, with such training. Rule of thumb methods have always a flavor of science in them; and though it has been said that an ounce of practice is worth a ton of theory, an ounce of practice with theory is worth a ton of practice without theory."

In concluding this part of the lecture, invention and improvement, as the result of scientific knowledge, is cited as a most important advantage of scientific study. We transfer this section of the lecture to our columns entire:

"The last advantage to which I shall call your attention is this—scientific knowledge and training are the parents of invention and improvement, and these are the highest order of education. I do not mean scheming, or the bringing forward of novelties for the sake of novelty, often in opposition to fixed principles, but the improvement of defects and the introduction of objects of real utility. Watt has said, 'It is a great thing to find out what will not do—it leads to our finding what will do.' When we know where the shoe pinches we can find a remedy."

"Some of the schemes which ignorant outsiders have submitted to telegraph engineers as improvements are simply ridiculous. I can remember, when the Atlantic Cable of 1858 failed, a lady writing and suggesting that cables should not be submarine but supermarine—that they should be suspended above the ocean; and she suggested that the Rock of Gibraltar,

the Peak of Teneriffe, and the Andes formed conspicuous objects for this purpose! Again, when we suffered so much, a little later, from the rupture of our light cables in the North Sea, an officer of one of the scientific corps of Her Majesty's army thought that he had made the grand discovery that the world was growing, and that it was owing to the continents separating themselves further and further by the growth of the globe that our cables snapped! Many suggested that the Atlantic Cable should be suspended by balloons, and even very recently a gentleman, who possesses no knowledge whatever of telegraphy, has endeavored, by the powerful aid of the press and other means, to thrust upon us an apparatus which we know to be radically wrong in principle, and which has been anticipated or tried by nearly every telegraph engineer who has exercised thought on the subject."

"On the other hand, those who possess scientific training, and those who have devoted their attention to remedy defects, have done great service to their profession. Mr. Fuller succeeded in replacing the defective sand batteries of twenty years ago by the ordinary sulphate battery, which still remains the form principally employed by the department. Mr. Varley, by the application of his powerful mind to the working of our wires, has brought the present state of insulation to the perfection it has now attained; and Sir Charles Wheatstone, by the constant and unremitting study of forty years, has brought out that beautiful automatic apparatus without which it would have been difficult for the Postal Telegraph Department to have transacted the enormous business thrown upon its hands by the adoption of the uniform shilling rate, and the low tariff applied to the press. The two first named telegraph engineers owe their success entirely to those principles of self-education that I wish to inculcate into you—and Faraday, a purely self-educated philosopher, has instanced Sir Charles Wheatstone and his inventions as examples of the effect of the continued application of these principles."

"There is plenty of room in the working of our instruments and wires for the display of your powers of invention and improvement. Real improvements are not the result of chance, they are the effects of the continued application of those methods of thought and study which education, and particularly scientific education, impart."

The second part of the lecture is devoted to the consideration of "Subjects of Study." The study of mathematics, pure and applied, is considered as essential to the proper knowledge of the higher branches of the telegraphic profession.

"Geometry and Algebra are essential to the skilled telegraphist, and it is difficult for any one to comprehend the higher branches of the profession until he has mastered the elementary principles of these two branches of pure mathematics. It is the application of Algebra which enables the telegraph engineer to tell the distance of a fault in a submarine cable to within half a mile, and to direct the sailor, with unerring accuracy, to the spot where he must apply his apparatus. * * * It is the differential calculus which enables the electrician to obtain the greatest possible speed of working with the least consumption of materials out of his submarine cable."

"Applied mathematics or dynamics considers force and its measurement. A current of electricity is only one form of force, and all our methods of electrical measurements are based primarily on the laws of dynamics. The stability of our posts, the strains upon our wires, the submersion of our cables, are applications of the laws of dynamics. A knowledge of chemistry, magnetism and electricity, is indispensable to the telegraphist. They are so mutually dependent that a little must be acquired of each branch of physics by studying any of those enumerated."

Space will not admit of our going more into detail with this lecture. In conclusion, the lecturer considers how this knowledge is to be obtained by those whom he addresses. Briefly, he recommends as aids to study attending lectures, reading of scientific and practical works on electricity, telegraphy and kindred subjects, observation, experiment and reflection.

Capital is only another name for the savings of society.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

How Fast we Might be Getting Ahead by Keeping What we Throw Away.

TO THE EDITOR OF THE TELEGRAPHER.

I HAVE been making a little calculation: Tilt your chair, and slide your pen back of your ear for a little while. My remarks are the result of reading a letter in your columns of July 21st, concerning toadyism. That correspondent's head is level, for it is my experience, and it is the chronic testimony of mankind, that for every act of toadyism performed the giver loses in self-esteem, and in the esteem of all men of good principle, and gains the contempt of many—especially the contempt of the receiver. When an employer notices in an employé a cringing disposition—a disposition to exalt him—he at once sets down that employé as one who has lost his self-esteem—one who feels he does not stand upon his merits, and one who can be imposed upon, and such an employé is treated accordingly.

As a body the telegraphers strongly exhibit these marks of weakness—this lack of independent manhood. I think I am not far wrong in saying there have been as many \$200 watches, etc., presented by telegraphers as there are officers, counting up from Dist. Supt's, inclusive.

There are in the W. U. Co. 48 officers, and probably among those solicited not a dozen employés refused to contribute; and still more probably, out of the 8,000 or 9,000 contributors, not three in each case felt it a free gift—pleasant to the giver. Now, why do all (practically) give, while within there is a universal feeling against such procedure? The reason is simply this:

First.—That a refusal might result to the detriment of him who refuses.

Second.—"What would the rest of the boys think?"

Third.—Manhood quails before pride on the one hand and dependence on the other.

For my part I should suspect of grave unworthiness any man who gets up a presentation, and I should know he felt his unworthiness; and I should also know, and you can all consult your experience on this head, that his chances for promotion were poor, in his own opinion, BEFORE the presentation, and considerably better afterwards. In fact, the levy which has been made upon the weakness of his fellow craft seldom fails of reward to him who "got up the thing." Somehow the recipient is always made aware of the name of every contributor, while the "Committee" fairly covers itself with notoriety through local and country prints.

A real, genuine gift of friendship would be in utter secrecy, so that the receiver would only know that he got a present; and if the gift is prompted by the affection for his goodness, he would never know even if it came from his subordinates. Were he a man deserving such affection, he would certainly never try and find out whence it came, but would endeavor to let flow more freely from his heart the milk of human kindness. But this is a digression bigger than the story, and its not entirely original, for I've read something on the same subject in your paper.

There are, then, 48 officers who, in the aggregate, have received in presents . . . \$9,600
Add to this for under officers . . . 1,000
Morse Testimonial . . . 6,000
Telegraphers' Insurance, say . . . 5,000

Total . . . \$21,600

How many of those who have an interest in this sum would rather see it all, every dollar of it, safely invested, or in bank, to the credit of the fraternity?

This amount would build a good piece of well equipped line—equipped as the editor of this paper persistently urges as the proper manner in every instance—and it would pay something if owned and run by the men of the profession.

If such sums can be gleaned from us with toadyism and the destruction of our manhood as the plain result and object, could we not raise millions for a better purpose?

The first class men of the existing corporations are of more value than all their wires and equipments. It is time the companies recognize our value. What do you think? Criticise me without favor.

Yours, in hope that we may turn over a new leaf.
CHICAGO.

A Hint to Heedless Operators.—In Telegraphing Time is Money.

TO THE EDITOR OF THE TELEGRAPHER.

In sending you this brief communication I do not wish to be considered a pernicious fault finder, but, on the contrary, desire simply to make a suggestion. I find it is becoming quite a common and popular (?) practice with many telegraph managers and operators, when working the lines, if a customer steps into the office they seem to feel in duty bound, even if in the middle of a message, to stop all proceedings on the line by opening the key and rushing to the receiving desk

to wait on the customer, while the whole circuit is waiting on both. To illustrate: A is sending a message to B, which, to be of any use, needs "rushing." About the middle of the message a customer steps into the latter's office. B doesn't stop to ascertain whether the customer really wishes anything, but opens his key; and, after saying to A "Cust., I," walks to the desk very leisurely, answers a score of useless questions, talks of the weather, "Joe Elliott's" fast time, or something equally important, for five minutes or so, then goes back and tells A to "Ga." Then follows one of the most beautiful little episodes of a telegrapher's whole experience—a general fight for the circuit by the more unsophisticated and those who were not posted as to the fact that B did all his local visits in that manner with his numerous customers; and, by the time order is restored on the line, full ten minutes (and this by the watch, in some instances,) have been lost. Of course, in offices large enough to admit of the receiving room and operating department being separate, this difficulty is obviated; but I refer to offices that are comprised in one room. Now, is it actually necessary to stand by the desk and watch every movement of a customer's pen as he writes a message? It strikes me any operator could look up from his copy long enough to signify to the customer in waiting that he would be attended to in a moment. A little care in this respect would tend very materially to give each office more time on a busy circuit.

An Ambitious Candidate for Telegraphic Honors and Pecuniary Rewards.

LANCASTER, Aug. 7.

TO THE EDITOR OF THE TELEGRAPHER.

HAVING heard much by the workers in the telegraphic corps, and made my observations on the subject of difficulties in the transmission of messages, my attention was more particularly directed to this subject by one of the managers of a prominent line, who is impressed with the belief that something is much needed to obviate the various mutations of weather on the wires. Heat, cold, water and electricity each have their influences—not any one in a distinguishing way, but in a modified quantity or quality—and as electricity is universal but not ubiquitous, chemical electricity, such as used on lines and generated by a battery, needs something as yet untried, but which may be developed, or learned, or wrought out by science, which can or would so insulate the wires as to be partly if not wholly free from the influences which may be exerted around. The writer is disposed to enter the field as a candidate for such a prize, if any company or companies would desire or encourage such an enterprise, or reward an ambitious genius with a commensurate requital. Labor has her treasures in storehouse for the reward of her toils; so Science, when united with her handmaiden, Genius, should also not only pluck some of the flowers, odoriferous with the fragrance of her own vintage, but should also be entitled to a wreath or chaplet adorned with the higher and more enriching bestowments of her perennial harvest.

If you think this article worthy a place in your paper or journal, I would be pleased with such a demonstration.

S. R. J., M. D.

Reply to "Telegraph Employee's" Response.

TO THE EDITOR OF THE TELEGRAPHER.

YES, I am perfectly aware that a man who is no man, but a coward, without a grain of manhood—in the position of editor of the *Journal of the Telegraph*—who has no views of his own, has no soul of his own; but, thank God, all editors are not such men, and I hope Mr. Grace is somewhat above this most abject condition of slavery. True, I have no grounds for such a hope except that within me, which ever whispers "the day of deliverance approaches."

"Telegraph Employee" seems to justify, without question, this most base of all kinds of servitude—that of the mind. A man who, for fear he may lose his bread and butter, will consent to give up his liberty of speech, is a nice subject to claim to be a citizen of this free republic—such a man would make a valuable soldier in time of peace. I believe your correspondent has not thought deeply on this, and after he has I feel sure he will conclude it is his duty, and every man's duty, to remove evil and the cause of it whenever and wherever he finds it, according to his understanding and ability. Every one who does this is better cared for than he who submits to be muzzled for pay; and, I repeat it, if Mr. Grace loses his place by advocating justice, as he understands it, he shall not want for anything which his present compensation secures to him. By this you understand I mean "justice" as between the W. U. Company and its employés.

And now, as to the bonds. When I entered the service there was not one man under bonds. That was seventeen years ago.

Many of the men who were then in the service are in it still, and some of them under bonds—those who handle considerable funds of the company.

When Anson Stager was the only Superintendent his position had about the same dimensions as has now a District Superintendent's. The present concern is only an aggregation of districts.

But I must say, right here, I feel it is degrading to argue the question as a matter of policy. Every man who has given a bond knows what were his feelings when he was asked to do it. Every such man

knows whether his self-esteem, his opinion of the employer, or his integrity has been enhanced thereby. No, sir; every such act lessens the friendship for each other between the employer and the employé. So far as I know, the mutual confidence and good will of long ago are dead and rotten, like the kernel of corn after it has been cast by the sower. Let us actively work and earnestly hope that, like the kernel of corn, a new life will spring up, which shall bear thousands of kernels equal to that which was once so excellent but now lies decayed in the earth.

This gentleman must learn of and know that the powerful yet quiet feeling which to-day pervades the telegraphic fraternity, demands a higher level than penitentiary policy, even if the Secretary of the U. S. Treasury does submit to such a policy.

It must be a low order of brains which can conceive the idea, and stick to it in broad daylight, that such a policy as is constantly advocated in THE TELEGRAPHER, both editorially and correspondentially, could be otherwise than greatly conducive to the best interests of the employer—the owner—as well as to ourselves.

Whatever is to be gained in this direction must receive its harmony and speedy consummation through this medium—THE TELEGRAPHER—and just as soon as two thirds of our best men are subscribers, the ball will begin to move.

Q. LANGWELL.

P. S.—Exceptions which prove the rule are valuable. There is a Manager, of whom I am proud to be an acquaintance, who, when he received a blank bond to have filled out as to sureties, returned the document to his Superintendent with a note saying, "you may send a man to take my place if you conclude to ask me a second time to give a bond."

The bond was not sent back to the Manager, but shortly afterwards his salary was increased, and to-day he stands below no man in the esteem of his Superintendent.

Another Manager, upon receiving a similar document, sent it to General Stager, asking him to become one of the sureties, and to then forward the paper to J. H. Wade, who was requested to become the other surety. General Stager and Mr. Wade both acquiesced without a question.

At headquarters this bond was considered a good burlesque on the system of sureties, which was the result aimed at by the employé. So you see that the "ordinary care and prudence in securing the proper application of its funds," which T. E. tells about, is held successfully in contempt on one hand and is successfully ridiculed on the other.

Q. L.

Suggestions to and for the Telegraphic Fraternity.

PHILADELPHIA, Aug. 5.

TO THE EDITOR OF THE TELEGRAPHER.

IN this season of general prosperity of telegraph enterprises, it is to be hoped that telegraph employés may be remembered and share in the advantages. If we had an organization such as has been suggested time and again in the columns of THE TELEGRAPHER, our claims would be more likely to receive the attention of telegraph officials and managers. Such an organization, properly inaugurated, ought to receive the support and countenance of all telegraphers. The experience of the Telegraphic Union and of the League are not encouraging in this respect, it is true, but was there not some defect in those organizations which would in part account for their failure?

The Union was more of a benefit than a protective organization. There appeared to be a general impression that the benefits conferred cost more than they came to, and that the actual benefit received was not sufficient to compensate for the outlay. Had its scope been wider it might perhaps have been yet in existence, and doing good service to the practical telegraphers. It did at all events accomplish one good work, and one which fully compensates for all the time and money bestowed upon it—I refer to the establishment of THE TELEGRAPHER, which now, for more than eight years' has sustained the cause and advocated the rights of the fraternity. Having accomplished this, its mission seemed to have been fulfilled, and it gradually died out. It expired honestly, however, paid its debts, and when it ceased to exist, had still some funds in its treasury, which, by the way, I believe have never been accounted for.

The League was never properly organized, having no central controlling authority, and leaving each circuit to judge when, how, and for what cause it should plunge the members into a general strike, whether prepared for such a serious demonstration or not.

Being thus loosely constituted, the natural result followed, and unexpectedly, and without any adequate preparation, the members employed by the Western Union Company found themselves engaged in a desperate struggle with that great and powerful corporation. The result of that strike was easily foreseen, and did not disappoint the wiser even among its members. Temporarily disastrous as it was, it was in the end rather beneficial than otherwise to the interests of the fraternity, and they have been much better treated and respected by the managers of the company since.

An organization such as shall prove permanent and beneficial, must learn wisdom from those which have preceded it, and its policy should be conciliatory rather than aggressive. It should seek to labor with rather than against the managers of telegraph companies. It should have a central organization, which should man-

age its affairs, and when it made itself manifest it should speak as representing the major part, and not a comparatively small proportion of the fraternity. Such an organization would cause the fraternity to be respected, and might eventually effect much needed and essential improvements and reforms.

Let us hear no more of strikes. They are the last and worst means to which resort should be had by any intelligent body of men, and, as experience has shown, more likely in the end to injure the strikers than those who are attacked. OLD UNIONIST.

Personals.

Mr. GEO. M. EITWILLER has resigned from the Savannah, Ga., S. and A. office, and accepted a position with the Western Union Company at 145 Broadway.

Mr. CHARLES THOMAS has resigned from the Western Union New Orleans, La., office, and goes to New York.

Mr. WM. McFARLAND, late of Nashville, Tenn., accepts a position in the New Orleans, La., Western Union office.

Mr. J. W. WATSON has been appointed train despatcher for the Western Division of the Lake Shore and Michigan Southern Railway, with his office at Elkhart, Indiana.

Mr. J. H. HATCH, formerly train despatcher of the Western Division of the Lake Shore and Michigan Southern Railway, goes to the Kalamazoo Division in the same capacity.

Mr. ED. L. HAVILAND has resigned his position in the Galveston, Texas, and accepted one in the Ennis, Texas, Western Union office.

The Telegraph.

Telegraph System of Continental Europe.

TO THE courtesy of the Director of the "Bureau Internationale des Administrations Télégraphiques," says a correspondent in the *New York Herald*, I am indebted for a full set of statistics relating to the entire telegraph system of Continental Europe. The bureau is acting, to some extent, as a clearing house to various Governments. The information thus obtained is, therefore, thoroughly reliable. The tables furnished by the Director, as will be seen by the accompanying abstract, tend to show that the total number of messages transmitted during the twelve months ending December 31, 1870, foot up 36,417,297, and that the entire sum collected from the public has been \$12,005,352. This gives an average of a fraction below thirty-three cents per message; and it must be remembered that in Europe single messages comprise twenty words, though no allowance is made for address and signature.

EUROPEAN TELEGRAPHIC STATISTICS FOR THE YEAR 1870.

Statement showing the Number of Telegraphic Messages Transmitted in various European Countries, with the Receipts Collected from the public during the same period.

COUNTRIES.	TOTAL NUMBER OF MESSAGES TRANSMITTED OVER THE WIRES DURING TWELVE MONTHS.	TOTAL AMOUNT PAID BY THE PUBLIC.
Austria, 1869.....	4,235,789	\$1,538,440
Germany, (North of), 1870.....	7,129,970	1,621,501
Germany (Bavaria), 1870.....	1,010,176	162,349
Germany (Baden), 1869.....	771,649	72,052
Germany (Württemberg), 1869.....	498,513	53,729
Belgium, 1870.....	2,401,765	310,938
Holland, 1870.....	1,850,893	255,961
Denmark, 1870.....	525,091	104,280
Norway, 1870.....	493,345	161,666
Sweden, 1870.....	1,370,432	224,200
Russia, 1870.....	2,716,321	2,735,200
Spain, 1870.....	1,049,816	289,340
Portugal, 1870.....	262,118	55,368
Italy, 1870.....	2,597,040	945,234
France, 1869.....	6,309,305	1,969,908
Switzerland, 1870.....	1,664,119	251,432
Romania, 1870.....	592,754	213,025
Greece, 1870.....	112,806	29,850
Turkey, 1870.....	825,393	1,210,184
Totals.....	36,417,297	\$12,005,352

A Terrific Thunder Storm along the Hudson River.—Lively Electrical Experiences in Telegraph Offices.

A DESPATCH from Poughkeepsie, N. Y., states that on Tuesday evening last a terrific electrical storm occurred along the Hudson river. The lightning was of the most fearful and appalling character. The day had been excessively hot, and the atmosphere unusually sultry. At twenty minutes past seven o'clock P. M. the storm, reaching northwest and south as far as the eye could see, moved up solidly and burst over the city. The lightning flashed from horizon to horizon incessantly in forked tongues and jagged chains. Looking up Main street from the Post-office balls of fire were apparently shooting into the Atlantic and Pacific Telegraph office, and explosion after explosion followed, like the rattle of musketry, as the electric

fluid exploded on the telegraphic instruments, creating terror in the hearts of everybody in the vicinity. At the Western Union Telegraph office a ball of fire entered the window and exploded on the desk of the operator, and was followed by other electric explosions, driving the operators from the vicinity of the wires and instruments.

Down at the depot the effect was also startling. In the telegraph office the Superintendent, J. M. Toucey, of the Hudson River Railroad, and Robert Wilkinson, the night operator, were seated at the instruments, and the operator was working the wires during the storm, because of the washing away of a culvert near Catskill, making telegraphing necessary. While they were busily engaged there came a blinding flash of lightning, and at the same instant a ball of fire dropped from the Poughkeepsie and Eastern Railroad wire and exploded on the desk between Mr. Toucey and Mr. Wilkinson. Both were affected—Mr. Wilkinson's ears and fingers tingling with electricity. Further work ceased at once till the storm subsided.

The engineer of the down train witnessed fearful scenes along the railroad while his train was in motion. Streaks of lightning ran around his engine and over it, and down upon the railroad track, shooting far ahead of the advancing train, and the air seemed to be impregnated with sulphur. Along the line of the railroad telegraph poles were split in every direction.

Thomas Fox, the Western Union operator, had accidentally touched one of the thumb screws in his instrument, when he, too, received a shock which bent his wrist, and kept it bent for a minute at least.

Strange to say not a building in the city was struck, nor was any one injured. The storm lasted nearly an hour. The lightning was of various colors—pale green, violet and crimson. The people generally were much alarmed.

Foreign Telegraphic Notes.

THE lower classes in Japan are afraid of the telegraph. They cannot altogether see "how the old thing works," and they are simple enough to think that it is the device of the devil, and that the wires are coated with the blood of young women, and that the census now being taken is for the sole purpose of finding out the number of available Japanese maidens whose blood will do for telegraphic purposes. The idea is a curious one, and it is strange that the Japanese should not understand the explanation.

An accident of an unusual character happened a few days ago to the short submarine telegraph cable which connects the Isle of Wight with the main land. The end of this cable is carried in shore along the bank of the river Yad, where it lies covered in the mud. A bull, which had taken it into his head to be fractious, after paying a visit to a chemist's shop, rushed down to the river bank, and there got into the mud just at the place where the cable lands. The animal, in its efforts to extricate itself, struck upon the cable and broke it. The cable, however, was speedily repaired, and is now in proper working order.

The late thunder storms have done considerable damage to the telegraphs of the United Kingdom. Demagnetisation of needles, and, in a large number of instances, the fusing and complete destruction of the instrument coils, show that the want of an efficient lightning protector is still much felt. Owing to the admirable arrangements of the service, however, little inconvenience will be found to arise from such accidents to the public in general, although it calls for the most energetic endeavors of the Post-office telegraph staff to prevent such inconveniences from arising.

Married.

THE Western Union Telegraph office at Topeka is decidedly the "marryingest" place in the country. Within a year the matrimonial epidemic has swept off three operators. First, Miss Jennie F. Twiss, then, but a few days since, Miss Christina D. Littlejohn, who was married to Prof. E. E. Barnum, and, lastly, we received yesterday two cards, bearing respectively the words, "Dr. and Mrs. M. P. Price," and "Mrs. Mary J. Cornwall."

We have known Dr. Price long (for Kansas) and well (for any country), and thus can afford to congratulate our telegraphic friend, Mrs. Cornwall, on leaving Illinois and coming to Kansas to consummate so fortunate a "Western union."—*The Republican Journal*, Lawrence, Kansas.

The Patent Office Gazette.

THE *Official Gazette* of the Patent Office is furnished at the Government expense to Senators and Representatives of Congress; each of these persons may designate eight public libraries to which the *Gazette* shall also be sent free. All others who desire to receive the publication must subscribe. The rate is to be not less than five dollars a year, which is the price at present. The Commissioner of Patents may, we presume, increase the price, should he deem it necessary. The publication of the drawings of the patents for the current year, on a reduced scale, has been commenced in the *Gazette*. They are admirably executed by the American Photo-Lithographic Company. The drawings are given in full, but such is the perfection of the reductions that, although the drawings of no less than thirty patents are in some cases presented on

a single page of the *Gazette*, every drawing is clear and legible.

The success of this excellent and economical mode of publishing the patent drawings will, it is to be hoped, induce Congress to provide the means for the printing of the specifications in the same concise manner. If fine types are used, and care taken not to waste space in the margins, it will be practicable for the Government to issue printed copies of all the patents, occupying only eight or ten volumes a year, at a cost to subscribers of from ten to twenty dollars. This will be a work of great public importance and value. At present the drawings are given in full but not the specifications. Only the concluding portions, or claims, of the specifications are now published.—*Scientific American*.

The Electrical Season.

THE atmosphere seems to be surcharged with electricity at the present time, as is evidenced by the brilliant auroral displays, and the constant and violent thunder storms which are of daily and nightly occurrence in different sections of the country. Telegraphic working is considerably impeded by this excess of atmospheric electricity, and telegraphers are having some lively and exciting experiences in their attempts to operate their instruments, though as yet we have heard of no serious injuries from this cause. It behooves all those having charge of telegraphic apparatus to be very careful how they handle them at such times, and to exercise more than usual caution and diligence in seeing that their lightning arresters are in good order and properly attached to the wires. They should also be careful to cut out of circuit their instruments when left for the night, or for any length of time unattended or unwatched.

We notice that the same electrical condition of the atmosphere exists in England, and much damage has been done to telegraph lines and instruments by violent electrical storms.

New Patents.

For the week ending July 16, and bearing that date.

SECOND ISSUE.

No. 129,219.—TELEGRAPH APPARATUS. Theodore M. Foote and Charles A. Randall, New York, N. Y., assignors to The Commercial Printing Telegraph Company.

1. A two spool electro-magnet, having its yoke or back piece in two pieces, substantially as shown.
2. An electro-magnet of this construction, in combination with another electro-magnet, substantially the same as shown and described.
3. A combined switch and relay, constructed substantially as described.
4. The arrangement of circuits, as herein shown and described.
5. A type wheel having a letter or letters to express the denominator of a fraction.
6. The combination of letters and figures to express fractions.
7. A dial telegraph face having three or more circles, one or more of them being used for expressing or indicating words, as shown and described.

No. 129,331.—COMBINED STEREOTYPING AND TELEGRAPHING MACHINE. Morris Gally, Rochester, N. Y.

Designed to do away with the necessity of the use of movable types, either in forms or parts of forms, for letter-press printing, or in forms or parts of forms from which stereotypes are prepared for press; and to enable operators who are preparing matter for press in one locality to reproduce the same in other localities at the same time, either in form of stereotype or stereotype mould.

1. A series of die strips or connections having dies of varying widths thereon, when they are flexible and are arranged side by side in a plane, for the purpose of permitting the dies to be turned out of their direct course, when required, and sit closely together in the line without throwing the dies "off their feet," or twisting or kinking the strips, substantially as set forth.
2. One or more sets of dies, the arrangement of each or any set being in such order that the difference in the thickness of the dies will vary by a gradual increase or decrease, so that the dies will require to be turned only slightly out of their course when set squarely together in the line, substantially as set forth.
3. In combination with one or a series of die strips other flexible strips, for guiding the die strips in their movements and preventing collision of the dies, substantially as set forth.
4. The gauges, one or both, having a portion cut away to permit the die strips not in use to pass beyond the extremity of the line as measured by the gauges, substantially as set forth.
5. The compound space, the sections of which gradually increase in width, and which are connected by bevel connections or their equivalents, substantially as set forth.
6. The combination, with the compound spaces, of their retaining pawls, substantially as set forth.
7. Combined with the die strip or strips having a rack or racks attached, the cam or cams for engaging and disengaging the rack or racks and gear, substantially as set forth.
8. The described arrangement of the cams upon their shafts so as to bring the racks consecutively into gear, substantially as set forth.
9. The arrangement of a compound space upon a die strip, substantially as set forth.
10. The method herein set forth for increasing the spaces set in the line, i. e., by the simultaneous movement of the compound spaces, to insure perfect and artistic justification.
11. The combination of the spur n or equivalents with the catch or pawl as, for the purpose set forth.
12. The combination of a mechanism for automatically arranging types, dies or matrices and an electric telegraph instrument, for the purpose of securing at a distance the arrangement of a line or lines before an impression is taken.
13. The body of the dies having beveled corners to prevent collision of the dies when used, either with or without the intermediate guiding strips, substantially as shown.
14. Combined with the operating lever a system of sub key-levers, substantially as described, to operate a short operating lever by any required number of keys.
15. The guards A¹⁵ and B¹⁵ or their equivalents, in combination with the soft material M¹⁵, substantially as set forth, for the purpose of constructing different parts of the mould or stereotype separately, preventing the impression of one part from displacing another part previously formed, securing a perfect stereotype or mould without the use of an entire form.

THE TELEGRAPHIC FRATERNITY.

DEVOTED TO THE INTERESTS
OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, AUGUST 17, 1872.

Premiums and Commissions.

We have decided to make a slight change in the terms of subscription for *THE TELEGRAPHIC FRATERNITY*. For the future the "Club terms" are done away with. But few subscriptions are now made in this way, and the club system is more trouble and annoyance to us, our agents and subscribers, than it amounts to. Single subscriptions will remain as before, at \$2 per year, payable in advance.

We shall not at present offer any long premium list, but will make the following premium proposition: For four subscriptions to *THE TELEGRAPHIC FRATERNITY*, at the regular subscription price for one year, we will send a copy of the paper free to the person sending us the subscriptions.

For ten new subscribers we will give, as a premium, *PICKETT'S Memorial Bust of Prof. S. F. B. MORSE*. This bust is what is termed cabinet size, and is finished after the style of the celebrated *ROGER'S* groups, and a superior work of art.

To those who may interest themselves in procuring subscriptions, we will allow, in lieu of the above, for new subscribers, 20 per cent. upon the amount collected, which may be retained in cash, or will send any books or instruments that may be desired for the amount of commission as a premium.

We trust that these propositions will meet with approval, and that the friends of the telegraphers' organ will at once use their best exertions to secure a handsome addition to our subscription list.

Extension of Volume VIII of The Telegrapher.

In regular course the current number would complete the Eighth Volume of *THE TELEGRAPHIC FRATERNITY*, and the succeeding number would commence a new volume. For several reasons we have decided to extend the present volume until the end of the year, and hereafter commence and end the volumes with the year. This will make Volume VIII cover about sixteen and a half months, or 71 instead of 52 numbers.

Originally the volumes were commenced and ended in August, in order that a full report of the business of the year might be made to the Annual Convention of the National Telegraphic Union, which assembled in September following. As the Union has long since ceased to exist, this reason is no longer of any validity or force.

We have found the commencing of the new volume at this season of the year very inconvenient, for many reasons. In the first place, it is the dull season. There is but little of special interest to the telegraphic fraternity transpiring. The telegraphers themselves are enjoying their vacations, or doing extra work, that their associates may enjoy a brief respite from duty. Their money is expended in such recreation, either for themselves or those dependent upon them. There is not much of telegraphic interest transpiring at this season of the year, and, commencing as the new volumes did, at the dull season during the whole twelve months, we have always been perplexed to de-

cide what changes, if any, in the paper would be warranted. When, at the commencement of the present volume, we enlarged the paper, we did so with considerable apprehension that the changes made, involving as they did additional expense, might prove damaging to it pecuniarily. The result has proved the wisdom of our course, and the past year has been more successful than the two or three that preceded it. The interest in the paper has evidently been increasing among the fraternity of late, and we are satisfied that the few individuals who are waiting and hoping for its demise are not likely to be gratified for some time to come.

We desire to still further enlarge the paper, and propose, if the fraternity second us by an increasing and liberal patronage, when Volume IX commences, with the new year, to add materially to its present size, either by the addition of four pages to the eight which now comprise our weekly issue, or by enlarging the size of the sheet upon which it is printed. The number of subscriptions which shall come in between this and the end of the year will influence our decision in this respect.

We design that *THE TELEGRAPHIC FRATERNITY* shall be improved in the quality as well as the quantity of its matter. No time, labor, or reasonable expense will be spared to effect this. We are constantly making new arrangements to this end—and a valuable and interesting feature of the coming year will be a series of foreign letters, which will appear from time to time in our columns. Our associate, Mr. F. L. POPE, will also continue to enrich its columns with his able contributions. The past character of the paper is an evidence and guaranty that there is and will be no going backward on our part, but rather a constant advance, in the future, as heretofore.

It should be constantly borne in mind that *THE TELEGRAPHIC FRATERNITY* is the organ of the telegraphic fraternity, the practical telegraphers, and not of any telegraph company. We look to them for encouragement and maintenance, and hope that every telegrapher will realize that it is his or her organ, and should receive cordial coöperation and support. See to it not only that your own name is on its subscription list, but urge upon your telegraphic acquaintances and associates the duty and importance of contributing at least the price of subscription towards maintaining the only organ of practical telegraphers in the world.

The power and influence of the paper will be in proportion to the number of names upon its subscription list, and the generality with which it is circulated among and read by the fraternity.

We appeal now to every friend of *THE TELEGRAPHIC FRATERNITY* to make this a personal matter, and at once commence canvassing for additional subscribers. Let there be such a generous addition to our list as shall warrant us in making such enlargement and improvement, at the commencement of the next volume, as shall give to each subscriber an additional consideration for the amount of his subscription.

To Our Subscribers.

A CONSIDERABLE number of subscriptions to *THE TELEGRAPHIC FRATERNITY* expire with the present number. We trust every subscriber who receives the usual notice of that expiration with this number will at once send the money for renewal, otherwise, if neglected or postponed, they may be unable to complete their files.

We hope and expect large additions to our list during the next few weeks, and desire to retain as many of our present subscribers as possible. The terms of the paper are strictly in advance, and, if cash for renewal is not received, the paper will be discontinued.

The United Kingdom General Post-office and Telegraph Service's Benefit Society.

We are under obligation to Mr. E. HAWKINS, Secretary of The United Kingdom General Post-office and Telegraph Service's Benefit Society, for a copy of the rules and regulations of the society. The association is composed of persons employed in the different departments of the postal and telegraph service, and its objects are stated to be, *first*, to promote unity amongst its members, and, *secondly*, to create a fund for the benefit of such members. As yet there does not appear to have been established any regular system of benefit or relief for members, each case being taken up and acted upon according to the circumstances.

The promoters of the society, in their prospectus, repudiate any idea of attempting to found a protective association. On this point they say: "While fully sensible that such means as are at present available for a fair representation of any grievance that may arise are practically useless without some means of intercommunication, they are, at the same time, convinced of the folly of any attempt at coercion; and, therefore, while they would not disguise their hope and desire that substantial good may eventually arise out of this society, they at the same time express their conviction that it is only by *uniting* and *persevering* in a legitimate way that any such good can be obtained."

The dues amount to about a dollar a year for each member.

For the present a weekly journal, published in London, entitled *The Bee Hive*, is the organ of the society, but it is hoped that it may be able to establish a newspaper of its own, especially devoted to postal and telegraphic interests.

Association of those employed in any business is desirable and beneficial, and although to our American ideas there don't seem to be very much proposed to be accomplished by this society, still, as a means of union and concentration of influence, it may eventually prove of value and importance.

The office of the society is at 26 Olney street, Walworth, London, S. E.

Brilliant Auroral Displays.

THERE have been recently some very brilliant displays of Aurora Borealis or Northern Lights, which are rather unusual at this season of the year. On Thursday evening, August 1st, the skies were lit up for some hours with a most magnificent exhibition of celestial fireworks, and again on Saturday, Aug. 3d—both of which continued for some hours, and were visible over a great extent of country. The electrical character of these exhibitions is now generally known and conceded, though one of the great morning newspapers of this city, which is noted for its scientific information and accuracy, gravely argues that they are caused by the refraction of the sun's light from the great polar ice fields!

On Thursday evening one of the northern wires of the Western Union Telegraph Company was worked from this city for some time with the auroral current, the batteries being disconnected; and on Saturday evening one of the eastern wires of the same company was worked successfully from this city to Boston for half an hour with the auroral current. This was doing pretty well for the refraction of light from polar ice fields.

London and New York Cable Time.

THE cable authorities recently published a statement that the average time occupied in transmission of messages between London and New York, during the week ending the 20th July, was thirteen minutes and fifty-nine and one half seconds each. The experience of the press does not justify this claim of extraordinary promptitude. During the week cited above the average time of forty-eight messages from London to the Associated Press was forty-nine minutes twenty seconds. Not one of the forty-eight was transmitted in the time claimed by the cable to have been the average of all its business. Two messages were transmitted in less than twenty minutes, three between twenty and thirty minutes, eleven occupied between thirty and forty minutes each, fourteen between forty and fifty minutes each, six between fifty and sixty minutes each, eleven an hour or more each, and one occupied two hours and four minutes.—*N. Y. Commercial Advertiser*.

A Minnesota editor speaks of another editor as a "senile slinger of unsavory English."

MORSE MEMORIAL BUST.

Mr. BYRON M. PICKETT, sculptor of the MORSE MEMORIAL STATUE, erected in Central Park, New York, by the Telegraphic Fraternity of the country, has completed a SMALL BUST of the late Prof. S. F. B. MORSE, which has been seen and cordially commended by the family of Prof. Morse and many of his friends.

He will supply copies of this BUST to the TELEGRAPHIC FRATERNITY at the very low price of **FOUR DOLLARS** each. Will forward by Express, C. O. D., if desired.

Address, **BYRON M. PICKETT,**
No. 765 Broadway (Room 7), New York

TELEGRAPH INSTRUMENTS**APPARATUS.**

The undersigned have on hand, and for sale on favorable terms, the following Telegraph Instruments and Apparatus:

BRADLEY'S BOX RELAYS AND KEYS.

Only a few of these remain unsold, and, as Dr. BRADLEY does not propose to engage hereafter in the manufacture of Telegraph Instruments, when these are disposed of no more can be obtained. Parties desiring to obtain them should make immediate application.

One pair of the celebrated and favorite
POPE & EDISON TYPE PRINTERS,
or Private Lines. These Instruments are in good order, and will be sold cheap if applied for immediately.

The popular

ANDERS & CO.'S MAGNETO-DIAL TELEGRAPH INSTRUMENTS,

for Private Lines. They require no battery, are always ready for use, and can be operated by any person with a few minutes' instruction.

SIGNAL BELL TELEGRAPHS.

A new combination, with Key on same base with the Bell, or otherwise, as may be required. Made under the patent of F. L. POPE.

COMBINATION RELAY AND KEY,

In an elegant Rosewood Base. Will work circuits of any length. The popular

NONPAREIL TELEGRAPH APPARATUS,

for Amateurs, Students and Short Lines. Nearly 1,000 of these Instruments have been sold since their introduction in December last, and the demand continues unabated.

For additional information, prices, &c., address

F. L. POPE & CO.,
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PICKETT'S STATUETTE OF PROF. MORSE.

F. L. POPE & CO. have arranged with Mr. BYRON M. PICKETT to receive orders for his

ELEGANT MEMORIAL BUST

OF THE LATE

Professor S. F. B. MORSE.

The Bust may be seen at our office, 194 Fulton Street, New York. Price, \$4. Sent, C. O. D., if requested.

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16,000 MILES

OF

"JOHNSON'S" WIRE

USED BY THE

TELEGRAPHS OF THE UNITED STATES

DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. **RICHARD JOHNSON & NEPHEW,**
MANCHESTER, ENGLAND.

Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All Telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. **RICHARD JOHNSON & NEPHEW** furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

TELEGRAPH LINES

OF ANY LENGTH FULLY EQUIPPED WITH

WIRE, INSULATORS, BATTERIES,
INSTRUMENTS, ETC.

L. G. TILLOTSON & CO.,
No. 8 DEY STREET,

NEW YORK.

Sole Agents for "Johnson's" Wire.
" " " American Compound Wire.
" " " Cauvet's Patent Sew Insulators.
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Manufacturers of every description of
TELEGRAPH APPARATUS.

AMERICAN FIRE ALARM AND POLICE TELEGRAPH.

GAMEWELL & CO., Proprietors,

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THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

Albany, N. Y.,
Allegheny, Pa.,
Boston, Mass.,
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Buffalo, N. Y.,
Baltimore, Md.,
Chicago, Ill.,
Cincinnati, Ohio,
Columbus, Ohio,
Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
Washington, D. C.,
Worcester, Mass.

The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for bells and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only **PERFECT, COMPLETE** and **RELIABLE** System

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM

(AND

POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. **GAMEWELL & CO.** are the owners of the original **FARMER & CHANNING PATENTS**, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION OF CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of **TELEGRAPHERS** in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application at above.

CHARLES T. CHESTER,
104 Centre Street,
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TELEGRAPH ENGINEER,
AND MANUFACTURER OF
INSTRUMENTS,
BATTERIES,
AND EVERY DESCRIPTION OF

TELEGRAPH SUPPLIES.

BUNNELL'S PATENT REPEATER.

These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

JONES' LOCK SWITCH-BOARD,

a most compact and reliable Switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

EXCLUSIVE AGENTS OF

A. G. DAY'S

KERITE,

OR

COMPOUND RUBBER COVERED WIRE.

SUBTERRANEAN & AERIAL WIRES,

OF THE

HIGHEST INSULATION.

We are now prepared to furnish, after an experience of three years, an Insulated Wire, which can be buried in the earth or exposed to rain and sun, or to the vapor of acids, without injury. Professor SILLIMAN, who has exposed it to the most destructive agencies, finds that it remains uninjured in an atmosphere of ozone, which would destroy gutta-percha in a few hours. It exceeds glass or any other known substance as a non-conductor.

We have made special arrangements to furnish this article for office purposes at a reduced rate.

ALSO, TO FURNISH

IRON CLAD CABLES,

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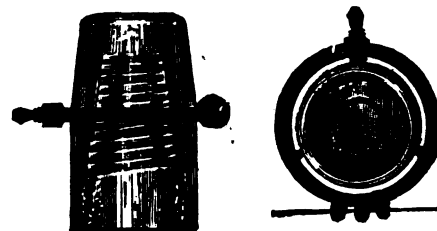
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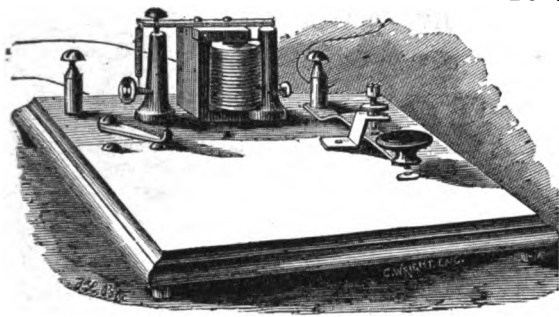
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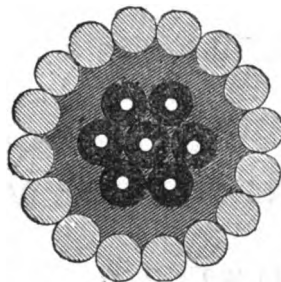
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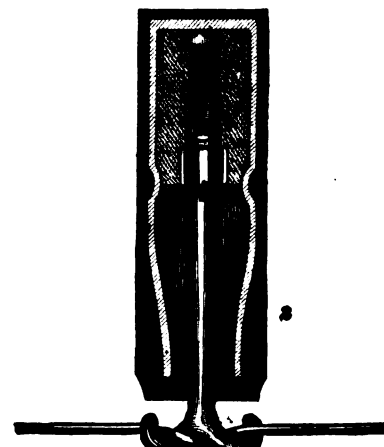
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Vol. VIII.—No. 53.

New York, Saturday, August 24, 1872.

Whole No. 319

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The New York Office of the Pacific and Atlantic Telegraph Company.

THE Pacific and Atlantic Telegraph Company found it to be imperatively necessary, the present season, to secure more adequate accommodations for its increasing business than that afforded by the office originally occupied by them on the corner of Wall and Broad streets. Even if the building had not been torn down, to admit of the construction of the new block now in process of erection on the site of that in which their office was located, the company would have been compelled to seek other and more commodious quarters. Accordingly, the basement office at No. 14 Broad street, near the New York Stock Exchange, was rented and fitted up as thoroughly and conveniently as possible, under the immediate supervision and direction of the manager of the company in this city, Mr. William H. Hall. A recent examination and inspection of the office afforded us satisfactory evidence that Mr. Hall has shown excellent judgment and discretion in arranging the office so as to make the best use of the space allowed him. Even now the room is insufficient in size, although far better adapted to the business than the one previously occupied.

The entrance to the receiving office is directly from Broad street. Descending a step or two from the sidewalk visitors find themselves in the receiving office. Here counters are provided, supplied with the necessary blanks and stationery, at which messages can be written. A handsome black walnut receiving desk and partition divides the public room from the operating and other departments. Courteous and attentive clerks are always ready to receive the despatches from customers, and afford the information constantly called for at leading telegraph offices.

At the right of the receiving desk is a door, which affords entrance to the manager's office. Adjoining the desk of the manager, who is at all times accessible to the public, and divided from it by a neat and tasteful wire partition, are the desks of the cashier and book-keepers. On the opposite side of the room are two handsome tables, divided by glass partitions into four departments each, which accommodate four sets of instruments to each table. Above the centre of each table is the gaslight arrangement. By means of large Argand burners one gas jet effectually lights up each table. A green chimney surmounts the burners and a white porcelain shade, by means of which a soft white light is cast down upon the tables, much better for the eyes of the operators than the ordinary glaring gas-light. In the rear of these tables is another smaller one, which accommodates a single set of instruments, which work on the wire connecting directly with the oil regions of Pennsylvania. A large amount of business is done on this wire, and, indeed, all the wires are kept very busy.

A Jones Lock Switch is used, through which all the wire and instrument connections are made.

Back of the operating department is the desk of the delivery clerk, and in the further part of the room is the section partitioned off for the numerous messengers constantly employed in delivering messages. At the delivery desk is an arrangement which is called a delivery board, the invention of Manager Hall, and which is undoubtedly a very useful adjunct to the delivery department, and essential aid to the delivery clerks in keeping track of messages requiring answers, delivered by the messengers. Running down the left border are numbers, from one to any number required. Opposite each number is a small wooden peg or knob, and opposite each of these numbers are a series of perforations extending entirely across the board from left to right. At the top, over these perforations, are also a series of numbers, from one to twelve. When a messenger—each of whom is designated by a number in all large offices—is given a route or number of messages to deliver, the wooden peg or knob opposite his number is moved into the perforation the number of which corresponds with the number of answers his messages call for. To illustrate: boy number three is given five messages to deliver, three of which require answers. The peg opposite number three is moved into the perforation underneath the number three at the top of the board, and when he returns from his route

he must hand to the delivery clerk the three answers called for or give a satisfactory reason for not obtaining the full number. Failing to do this, his services are soon dispensed with, and a more reliable or enterprising messenger employed in his place. This arrangement has been found so advantageous and efficient that the Pacific and Atlantic Company have adopted it for all their larger offices, where a number of messengers are employed.

At the right of the room and near the delivery desk is a closet, where the blanks and supplies of the office are kept, and at one end of this closet shelves are provided, on which the Daniells cells, of which the local batteries are composed, are kept.

The main battery room is in the upper story of the building, and is fitted up with the usual conveniences. A lead pipe has been carried from the battery zinc outside the building in the rear, through which the drainage is conducted into the sewer—the chemicals used destroying the ordinary metal pipes in a short time. In the main battery room there are in constant use 125 cells of electropion battery.

We must not forget to mention the magnificent pole, 65 feet in height, 18 inches at the butt and 5 inches at the top, which stands in front of the Broad street entrance, and from which all the wires, 25 in number, are carried into the office. This is probably the handsomest telegraph pole in the city. It is octagonal in shape and painted a handsome vermilion color. No labor or expense has been spared to make this perfect and symmetrical, and it is the pride of Manager Hall, under whose direction it was prepared and erected.

The office, its equipment and surroundings, as a whole, reflect credit upon Mr. Hall and the company. Its location is most excellent for business, and we are pleased to learn that the business of the company, under its present excellent management, is large and constantly increasing.

In addition to the main office the Pacific and Atlantic Company have thirteen branch offices in this city, well located for the accommodation of customers and the benefit of its business.

The following is the staff engaged in the main office:

WM. H. HALL, Manager.
THOS. T. DENNIS, Chief Operator.
A. H. SEYMOUR, Asst. Chief Operator.
J. A. BURKHOLDER, Night Manager.
SAMUEL SMITH, Receiver.
J. A. BAILEY, Delivery Clerk.
GEO. F. LEWIS, Cashier.

OPERATORS.—Day Force.

E. W. H. Coglan, J. A. Wolfinger,
Mrs. J. A. Capron, A. S. Ely,
Geo. Riddon, T. J. Gearv.

Night Force.

S. H. Huxford, J. F. Crate,
D. D. Forbes.

Night Delivery Clerk.

R. S. Van Voorhis.

Automatic Electric Railroad Signals.—New System.—Successful Experiments upon the Pennsylvania Railroad.

THE Pennsylvania Railroad Company are making every endeavor to provide for greater safety on the road by every known modern improvement or invention. For some days they have been engaged in erecting a line of new telegraphic signals, of which we present a minute and interesting description.

The object of this system of signals is to preserve a proper interval of space between trains going in the same direction upon the same track. The usual method of accomplishing this result upon roads crowded with trains has been to establish telegraph stations, at suitable intervals apart, provided with signals worked by the operators, by means of which the latter are enabled to indicate to the engineer of an approaching train whether the preceding train has or has not passed the next signal station in advance, in accordance with information received from thence by telegraph. This is substantially what is termed the "block system." It is much used in Europe, but the great expense attending its operation, involving, as it necessarily does, the em-

ployment of a day and night operator at every station, has prevented its adoption to any extent in this country. The costliness of the block system, together with other objections attending it, has led to various attempts, both in Europe and in this country, to make the signals entirely automatic in their action. This result has been successfully accomplished, for the first time, by the present invention, and in a manner equally simple and ingenious.

Signal boxes are mounted on posts at convenient intervals along the road, varying from half a mile to a mile apart, according to circumstances. There are at present three between East Liberty and Lawrenceville, located respectively at Rouns, Shadyside and Millvale, and so arranged as to be operated by batteries placed in the station buildings. Perhaps the most ingenious part of the whole invention is the method by which the electric circuit for operating the signal is connected by a passing train. This is done by insulating a short section of the track, and conducting the wires underground, and attaching them directly to the rails, so that the wheels and axles of the locomotive and cars complete and actually form a part of the electric circuit between the insulated and uninsulated portions of the track, and thus cause the signal to move.

Thus an inward bound train, on passing Rouns station, connects the circuit and displays the red signal, and then passes on till it reaches the connection of the Shadyside signal, changing that also to red, in the same manner; but at the same instant a portion of the electric current from the battery at Shadyside goes back over the telegraph wires to Rouns, causing the red signal there to be withdrawn and replaced by a white one—thus notifying any train that may be following that the track is now clear between the two stations. Similarly, when the train reaches Millvale, a red signal will be turned on at that point and a white one at Shadyside.

The inventor of the system, Mr. Frank L. Pope, of New York, has been for several days engaged in superintending the erection of the signals at the above points. Their operation has thus far been quite successful—a result owing in a great measure to the active assistance and cooperation of Mr. John Suter, division operator of the Pennsylvania Railroad telegraph, who has given his constant personal supervision to the work of erecting the signals.—*Evening Leader*, Pittsburg, Pa.

Submarine Telegraph.

THE following from Mr. Abbott's Financial Circular for the month of July, published in London, contains some details in regard to submarine telegraphs which will be found of general interest:

"This market has been neglected—the stagnation being no doubt occasioned by the want of information as to the traffic receipts. It is, however, to be hoped that, as the principle of amalgamation becomes more developed, the objection to the publication weekly of the traffic receipts, which gives so much life and confidence to railway property, will be removed. It is satisfactory to know that those who have the management of the great submarine lines are more than satisfied with the results so far attained; in fact, with the present state of commercial prosperity, this could not be otherwise. Great as the strides have been in our home telegraph system under the direction of the Post-office authorities, I believe they will be far eclipsed by the success attending the great submarine links of intelligence to more distant lands. Some facts connected with the working of these enterprises may prove of interest to many who have not hitherto turned their attention to submarine cable traffic. It may not be generally known that messages can be forwarded from London to New York in the space of three minutes, if the lines be kept clear for a special object, but the management have now brought the ordinary traffic to such perfection that the average time on a working day does not exceed twelve and a half minutes between these two important centres of commerce. The difference of time between the two hemispheres also gives a special advantage to these properties, inasmuch as that whilst business is most active from London to New York and all the great western cities, the return tide from America does not set in until the lines are free from English business—thus the three cables are practically enabled to accomplish the work of six lines.

As further evidence of the vast importance of these great arteries for the interchange of intelligence, it may be mentioned that a merchant in Bombay may despatch a message at 9 A. M. to his New York correspondent, which would reach its destination at 6 A. M. the same morning (New York time), and the return message would arrive at Bombay the same night. This is a transaction of constant occurrence. As regards the ordinary business of the Eastern submarine lines, I may state that the traffic superintendent of the Eastern Telegraph Company has issued an account of the actual time occupied in the despatch of messages from India and China to this country, based on the latest dates received, on each day during the seven weeks ending on the 19th ultimo, from which I gather that the average speed obtained was: from Bombay, 1 hour and 43 minutes; from Calcutta, 2 hours and 37 minutes; from Hong Kong, 4 hours and 44 minutes; from Shanghai, 5 hours and 18 minutes. These great markets of the East, possessing such a stimulating medium of intelligence, are, undoubtedly, reaping an immense advantage over countries such as the Cape, Brazil, and the west coast of South America, shut out as they are from electrical communication with Europe. With reference to the interest of investors, attention may be drawn to the fact that, while the working expenses of railways and other undertakings are now increasing, submarine cable traffic is not only worked at about 10 per cent. of the receipts, but, owing to the wonderful discoveries of an eminent electrician, the work can now be accomplished with greater speed, perfect accuracy, and at a considerable reduction of cost.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

The New Pittsburgh Western Union Office.— Brooks and Glass Insulation, Bad Joints, &c.

PITTSBURG, PA., Aug. 13.

TO THE EDITOR OF THE TELEGRAPHIC.

FOR several months I have been waiting in hopes of seeing in the columns of THE TELEGRAPHIC some communication relative to telegraphic matters in the "Smoky City," but have been disappointed, and have at last concluded to take upon myself—though with some diffidence as to my ability—the task of preparing a letter for publication.

Before commencing the more essential part of my communication, I would remark that it appears to me that our brother operators occupy the columns of our paper too much with complaints of grievances; and when they have pleasant offices, and other things comfortable and satisfactory, they become lethargic, and do not think of the pleasure it would afford friends and old acquaintances and associates elsewhere to hear of their prosperity and happiness. It seems to me that this is not exactly the proper course. Our friends and the public should hear both sides of the question. Our greatest effort and desire is for pleasure, and the easiest and most satisfactory way to gain this is, as far as we can, to make others happy. This idea may seem singular to some, who are always inclined to look rather at the discomforts and inconveniences they suffer than to the comforts and conveniences they enjoy; but it has been proved true in one instance, at least, and is very easily tested by others.

About a year and a half ago the main office of the Western Union Company in this city was located at 67 and 69 Fifth avenue, and we occupied a room of about 35 by 80 feet dimensions, with three dingy windows in the narrow front through which to obtain light and air. It must have been an uncommonly bright and clear day when we were not obliged to depend upon gas for the necessary light by which to do our business. Besides this, the ventilation was very defective, and in the coldest weather the whole room was warmed by one large stove in the centre. There were, besides, numerous other and more vexatious arrangements, inseparable from the location, which would have been almost unendurable but for the fact that it was a pleasure for any one to work for those under whom we were placed, and, I might almost add, under any circumstances. Without exception, from the Superintendent down, we are highly favored in our official superiors.

One year ago, last April, we were transferred from the quarters which I have briefly described above to an office probably as pleasant and convenient as can be found in the country. We now occupy a large and excellently lighted and ventilated room on the corner of Wood and Fifth streets. The operating department is in the fourth story of the building, and is heated by steam—five steam registers being distributed so as to give a pleasant and agreeable temperature in all parts of it, even in the coldest and most disagreeable winter weather. The room is furnished with eleven tables, each table supporting four complete sets of instruments, among which are five sets of Milliken and one set of Gray & Barton repeaters. The switch board, which was made by Gray & Barton, of Chicago, is of the peg pattern, and intended to accommodate

sixty wires, but as yet there are only forty-nine wires, with several loops, to different parts of the city, in use. Our instruments (with the exception of the Milliken repeaters) are of the Ottawa pattern and manufacture. The office wires are run in the usual manner for large offices, under a raised platform beneath the tables. The main batteries used are the Grove, but the Calland has been adopted exclusively for the locals. The battery room is in the fifth story, where there are two main batteries of forty-five and one of fifty cells, besides two city line batteries of twenty cells each.

The office of the Superintendent of this District, Mr. C. O. Rowe, is on the third floor, below the operating room; and the receiving room and office of the Manager, Mr. S. L. Gilson, are on the first floor, and are connected with the operating room by a pneumatic tube.

Our Chief Operator, Mr. D. Fleming, has provided himself with one of Siemens's Galvanometers, by the use of which he has made himself thoroughly familiar with the condition of the wires, some of which test up pretty well. It is seldom that New York and St. Louis are unable to work one through wire, and New York and Cincinnati two, by this route, and they usually work very well.

Although we are all aware of the defects of glass insulation, I think that not more than half the hard working of the wires is justly chargeable to them. In the last number of THE TELEGRAPHIC you spoke of the new order issued by the General Manager of the Pennsylvania R. R. Co. for the exclusive use of Brooks insulators upon the telegraph lines of that company. This is certainly a very important improvement; but, in connection with that fact, it should be stated that every joint in the line wire on that road is firmly soldered, and, whenever breaks occur in the line, the joints are promptly soldered as soon as the line is repaired. Their Chief Operator, Mr. McCormick, has learned a fact—which most of our railroad telegraph friends seem to be either ignorant of or ignore—which is, that rusty joints do not make a good conductor. Probably many railroad telegraph managers and operators would be surprised and incredulous if told that, at numerous places on their lines (where they pass through woods and are often broken by trees), a dozen joints could be pointed out, within a distance of forty rods, the combined resistance of which would more than equal fifteen miles of number eight wire. In fact, it is not an uncommon occurrence for our repairman to bring in single connections that measure as high as twenty-five ohms resistance!

The joints of all our eastern wires are soldered, and several of them run on Brooks insulators as far as Altoona (the end of Mr. Rowe's district), and they give results so superior to our western wires that it is to be hoped the latter may soon go through the same process.

The following is the staff of the office, and with this I will close this already somewhat lengthy communication:

S. L. GILSON, Manager.
D. FLEMING, Chief Operator.
MARION MARKLE, Circuit Manager.
J. T. MCCONNELL, Night Chief.

And the following operators:

T. W. Williams,	M. R. Wolff,
J. M. Fisher,	Jesse Mellor,
James Kerr,	J. M. Coulter,
Benj. Lloyd,	Reese Lloyd,
— Wells,	Victor Muse,
C. H. McConnell,	Jas. Bryant,
M. Munson,	D. Moreland,
S. A. Duncan,	Wm. Maize,
— Irwin,	S. S. Wolfe,
J. A. Aughenbaugh,	Wm. Byrne,
H. M. Burrell,	R. D. E. Rowe,
D. Colestock,	L. McMullin,
— McCartney,	— Arensburg,
M. Ryan,	J. E. Palmer,
— Gosden,	OLR.

Editorial Responsibility and the Bond Question.

TO THE EDITOR OF THE TELEGRAPHIC.

Q. LANGWELL seems to misapprehend entirely the position of the editor of the Western Union official organ, and also the purposes for which that paper was established and is published. It is neither my province or purpose to appear as the defender or advocate of the paper, but certainly there is neither sense, reason or justice in his attacks or imputations upon its present editor. Why he should consider the editorship of that paper a base kind of servitude certainly surpasses any ordinary comprehension. If Mr. Grace were editing a paper of his own, for which he personally appealed to telegraphers for support, he might reasonably be expected to work especially for their interests. On the contrary, he is employed at a certain salary, to do certain clerical and literary labor for the Western Union Telegraph Company. As I understand it, he should be no more blamed for doing this business under direction than any other business of the company. The editor of that paper, as I stated in my previous communication, has probably as little to do with the policy upon which it is conducted as Q. L. himself. It would not only be Quixotic but dishonest for him to take advantage of his position to make use of its columns in a single issue to ventilate a policy inimical to that of the chosen managers of the company, merely for the sake of being martyred for the gratification of crack-

brained enthusiasts, such as Q. L. appears to be. It is to be hoped that your correspondent will be satisfied with having ventilated his ideas, and allow Mr. Grace, who is a very worthy and intelligent gentleman, to perform the duties for which he is paid, in peace.

As regards the bond question, it is true that Q. L. represents the mistaken ideas of many of those who are called upon to give bonds for the faithful discharge of their pecuniary trusts to the Western Union and other companies. The idea of any insult being intended or given by such a requirement is, however, most absurd. Were telegraphers all perfect there would be no necessity for such security, but the experience of all who have had the management of telegraph finances proves that this is by no means the case. Did Q. L. never hear of any embezzlement of telegraph funds by those necessarily intrusted with them? I will venture to say that, in times past, the losses of telegraph companies from such embezzlements may be reckoned by tens of thousands of dollars. It was the frequency of losses from such dishonest employes that first led to the requirement of security for the honest disposition of the funds of the companies. If, in certain cases, to spare the feelings of one or two old and tried employes, the exaction of the security is waived, that is a merely personal matter. In case the manager whose bond was signed by General Stager and President Wade had proved unfaithful, they would have been obliged to make good the loss, just as would any other responsible persons who might sign it. I fail, therefore, to see where the "burlesque" comes in. He was merely fortunate in being able to so readily procure responsible bondsmen.

TELEGRAPH EMPLOYE.

Imputed Authorship of a Communication Disavowed.

WELLS, MINN., Aug. 13.

TO THE EDITOR OF THE TELEGRAPHIC.

DURING a recent visit east I found that some of my railroad and telegraphic friends gave me credit for an article on Train Despatching which appeared in your issue of March 9th, dated Southern Minnesota R. R., and signed "P. J." I would not trouble you to publish my denial at this late day only that the article in question reflected on the system of a neighboring corporation. My first knowledge of the article was seeing it in THE TELEGRAPHIC.

J. M. NYE.

Personals.

Mr. JULES GUTHRIDGE has resigned from the Pacific and Atlantic New Orleans, La., office, and accepts a position with the Western Union Co. at Mobile, Ala.

Mr. J. L. HORN, formerly operator in the train master's office at Mauch Chunk, Pa., of the Central Railroad of New Jersey, is now in the Charleston, S. C., Western Union office, and would like to obtain the present address of Mr. J. W. GARDNER, who was working for the same company at Penobscot, Pa.

Mr. F. G. BROWN has resigned from the Burlington, Iowa, Western Union office, and accepted a position with the same company at 145 Broadway, in this city.

Press Telegraphic Despatches in Jamaica.

THE agent of the Associated Press has appeared before the Governor and Council, by petition, praying that a law should be passed to protect the copyright for sixty hours after their publication of such telegrams as may be transmitted by, and purchased from the New York Associated Press. The petition was referred to a select committee, who reported unfavorably to the petition. When the matter came up for discussion the Governor, who sits at the Council Board as President, said that he entirely agreed with the report and the arguments by which it had been supported, but he did not know that the public were very well satisfied with the telegrams, such as were got here; at all events he was not, and he had reason to think the public were not. The news telegrams were got very fitfully, and with regard to commercial telegrams he thought they should come with the regularity of clock-work. They should be full, and not only full but reliable, considering their importance to commercial men; and he did not think that could be said of the way in which we receive our telegrams at present. He believed it would be advisable that the Government should pay for telegrams, political and commercial; but, of course, they must be telegrams on which reliance could be placed, and must be received with regularity. Telegrams of this description being of service to everybody, and to commercial men especially, could, he thought, with propriety be paid for out of the general revenues; and if that could be done, and done cheaply, he thought it would be very advisable.

The Hon. Colonial Secretary said, after what had fallen from the President, he thought it right to state there was every expectation of having telegrams in the way suggested in a short time. Here the matter rests.

The electro-magnet was invented by Sturgeon, and an account of his experiments was published in November, 1825. It is said that to him also is due the suggestion of amalgamating with mercury the zinc plates of a battery.

The Telegraph.

The West Indies and Panama Cable Expedition.

FROM Kingston, Jamaica, under date of August 10, by the steamship *Rising Star*, we have the following news report:

"Sir Charles Bright, the electrician, arrived here in the British mail packet from Southampton, to look after the wire covered cable between this city and Aspinwall. The cable fleet arrived in Kingston reporting the loss of the greater part of their grappling gear, and without any favorable tidings of the lost cable. After coaling and undergoing some repairs the vessel will return to the search, this time under the direction of Sir Charles Bright himself. Mr. Edward Bright returns to England on important business.

"It is reported that the Great Western Telegraph Company, to complete their West India and South American arrangements, have decided upon running a line of cable from St. Thomas direct to Aspinwall, St. Thomas being connected with another line of cable to the Island of Bermuda, which connects with New York on the one hand and England on the other. Messages are to be sent at the rate of twenty words for twenty shillings."

Western Union Telegraph.

NOTICING the fact that the most decided fall last week was in this stock, the *N. Y. Tribune* of the 12th (money article) says:

"The depression is attributed to the failure of the Co. to negotiate their real estate bonds in the London market, and the alleged necessity of the sale of the Co.'s stock, to provide the means for the construction of the new building about to be erected on Broadway. It seems extraordinary that so excellent a security should go begging. We have, for two years, believed the stock to be more valuable than the quoted price has indicated, and now can see no reason, even if the story of failure were true, why such an event should have so serious an effect. We warn innocent holders against parting with their shares through fear of the final result, believing the stock to be intrinsically valuable, and that the stock will find its proper level again."

Concerning the rumored failure in the London market, the President, Wm. Orton, writes to the *Tribune*, Aug. 12. We condense:

"1. The bonds (as above) for \$1,500,000 were sold and delivered to, and paid for by a London house in June last, at par in currency. 2. As payment has already been made for the land, and the remainder of the proceeds is ample for the erection of the new building, 'the alleged necessity of the sale of the Co.'s stock' does not exist. Not one share of the stock purchased for account of the Co. has been or will be sold." He adds that "the managers never had so many and so substantial reasons for being satisfied with the condition of its affairs, and with the prospects for the future, as at the present time. Its revenues, gross and net, are larger than ever before, and the evidences are abundant that the increase of both in the immediate future will be greater than during any corresponding period in the past."

Hydro-Electric Cable.

EXPERIMENTS are continuing with this new invention of M. Tomasi, 69 Avenue de l'Alma, Paris, which depends upon undulations in a fluid vein confined in a copper tube, and which, it is said, is about to be practically applied. The latest result reported is that the inventor has succeeded in dividing the pressure exercised at the outset into and distinguishing the two parts—one belonging to the receiving apparatus, which is constant, and the other appertaining to the cable or transmitting fluid. The latter is weak, not exceeding the third of an atmosphere per kilometre, and is variable in direct proportion, apparently, to the length of the cable. Hence, the pressure to be exerted does not exceed practicable limits.

Foreign Telegraphic Notes.

THE total number of messages forwarded from English postal telegraph stations during the week ending August 3, 1872, was 330,500—an increase over the corresponding week of the previous year of 77,455.

By royal decree the Platino-Brasileira Telegraphic Company has obtained authorization to operate in the empire, and approval of the statutes. The company is formed to carry out the Lamas telegraph concessions from the Argentine and Oriental Governments, with power to contract with the Brazilian Government for connecting the Argentine and Oriental lines with those of Brazil, and to purchase the Lamas concession for a telegraph cable between Rio Janeiro and Montevideo.

The question of the employment of women in the telegraph and railway departments having again been mooted in Germany, the Minister for Trade and Public Works has decided that they may be admissible as telegraphic operators and for the sale of railway tickets, but are to be excluded from moving the points and attending to the barriers at crossings—nor can they be employed to replace the patrols on the line. A general order to this effect is about to be issued.

Telegraphic despatches are now received in South Australia nine days from London.

From Queensland we learn that telegraphic communication continues to extend notwithstanding political fixation. Tenders have been voted for an extension from the Burdekin River to Ravenswood. The line from Cardwell to the Gulf of Carpentaria (393 miles) was opened on the 3d of January last; it is, therefore, ready for union with the cable from Java. There is a proposition now before Government, with respect to that same cable communication, which will be likely to obtain more favor than the South Australian scheme. With the exception of the communication between Java and Port Darwin, arrangements are perfected for complete telegraphic intercourse with Europe. The line by Queensland is considered, for practical purposes, far safer and more easily maintained than the South Australian line, which is on the point of being completed.

It is reported that a line of telegraph cable has been arranged for, to be laid between the island of Jamaica and Belize, the capital of British Honduras.

The receipts of the Great Northern Telegraph on their European lines during July were 124,293fr. (£4,922), against 105,385fr. (£4,216) in July, 1871—showing an increase of 18,908fr. (£756).

Telegraphic Brevities.

ON Friday evening five Indians entered a settlement at Mount Pleasant, Utah, and tomahawked a telegraph operator as he was leaving his office. His skull was fractured by five blows, from which he will probably die.

New telegraph offices have recently been opened at Cedar City and De Kalb, Mo., Conway and Port Allen, Iowa, McAllister and Chouteau, Indian Territory, Ennis and Hutchens, Texas, and Gallatin, Montana.

A Conscientious Telegraph Superintendent.

THE Superintendent of the Hawkeye Telegraph, Mr. James Gullihier, has a hand-car which, for general finish and beauty, is equal to the palace cars of the Central. Mr. Gullihier is also train despatcher on the Central, and, at the time of the great conflagration in this city, refused to leave his post at the instrument, although requested to do so by Pres't Gilman, as Mr. G's family were residing in the probable path of the devouring element. "No," says Gullihier, "I must remain and attend to the trains and telegraph for aid;" and says, he, "if the fire approaches my house Mrs. G. can vacate and come to me, and I know she has too much sense to be burnt up. My place is here, and here I remain;" and so he did, as well as to the satisfaction of Pres't Gilman. This brave man first considered the interest of his employers, and as there was no one to take his place at the instruments, he felt that accidents and loss of life and property might result if there was no one to keep things straight. We are pleased to record this act of heroism and consciousness of responsibility possessed by this unselfish man, and Pres't Gilman, who informed us of this circumstance, has taken stock in Gullihier at par.—*The Marshall Times*, Marshalltown, Iowa.

Sensible Views.

THE Boston *Globe* advocates, in season and out, the adoption of the postal telegraph scheme. Its arguments to show the feasibility of the plan are ornate and plausible, but to those who know what the difficulty with the *Globe* is—that it is not a member of the Associated Press, and cannot become one—its talk about "monopolies," "the greatest good of the people," etc., is very funny. It is not the fault of any telegraph company that the Boston members of the Associated Press, an organization between whom and the former there is no stronger tie than between the company and any one who uses its wires and pays for it, do not want the *Globe* to have its despatches. Because the *Globe*'s telegrams are sent as "specials," at an enormous expense to the publishers, and because they are most incomplete, its editor urges the postal system, hoping that out of the chaos which would follow the transferring of the wires to the Government that his paper would gain something. No one who has the slightest knowledge of telegraphy is insane enough to suppose that the high rate of speed and marvellous efficiency of the telegraph, as now managed, could be maintained in the hands of the Government. The plea that the European telegraphs are controlled successfully by the Government amounts to nothing. We move twice in this country to our English and German cousins' once. The *Globe* knows well enough that there is no such tendency among business men or newspapers in Europe to utilize the telegraph as there is here. We have no doubt that the English, Russian, Norwegian, Swedish and Danish Governments are managing the thing about as well—or more properly about as badly—as it was managed by the old administrations, but it does not follow that we should relinquish a perfectly systematized institution to the inexperienced hands of Government officials, because the European system is no more of a slow coach now than it was before the Government consolidated it with the post-office department.—*Providence (R. I.) Morning Herald*.

"The Angels in the Panorama business" is the heading given by the Chicago *Times* to its description of the aurora borealis.

Patent Suit.

Dr. EDWARD A. HILL, of Chicago, Ill., has commenced a suit in the United States District Court against Elisha Gray, Enos M. Barton and Anson Slager, for infringement of patent for certain improvements in "Hotel Annunciators and Fire Alarms."

Lightning does remarkable things every summer, but this year it is surpassing itself.

New Patents.

For the week ending July 16, and bearing that date.

THIRD ISSUE.

No. 129,408.—ELECTRIC SIGNALING APPARATUS FOR RAILROADS. Stephen C. Hendrickson, Brooklyn, E. D., N. Y., and Frank L. Pope, Elizabeth, N. J.

1. The combination of the electro-magnet E, armature e, lever D, and rollers d, one or both, with the spiral track a, vertical spindle A, signal B or C, either or both, substantially in the manner and for the purpose specified.
2. The combination with the rail R of the compound lever Q Q', the fork f, and vessels S S, containing mercury or other suitable material, in the manner and for the purpose specified.
3. The combination of the rail R, rod W, cam w, and circuit closing springs w' w'', substantially as and for the purpose specified.
4. The combination of the lever Q', cylinders U V, pistons u' v', and springs x y, substantially as and for the purpose specified.
5. The combination, with an electric signaling apparatus, of a revolving electro-motor for operating the hammer of an alarm bell, substantially as specified.
6. The combination of the electro-magnets M N, armature m, and lever H, when the magnets M N are in separate and independent circuits, and arranged to be brought into action alternately, for opening and closing a local circuit operating a signal in a railway signaling apparatus, substantially as herein specified.

No. 129,425.—ELECTRIC SIGNALING APPARATUS FOR RAILROADS. Frank L. Pope, Elizabeth, N. J.

Railroad divided into sections insulated from each other, the rails forming the circuit, which is completed and signal made when the rails are bridged by an axle and wheels.

1. The arrangement of the ends of two abutting rails of a railroad track in separate chairs upon a sleeper, whereby metallic contact between the said rails is prevented and the extent of an electrical circuit limited, substantially as and for the purpose herein specified.
2. The combination of an alarm or audible signal with the rails of a railroad track when the said rails form a portion of the electrical circuit, which includes the electro-magnet or magnets that operate the alarm, substantially as and for the purpose herein specified.
3. The combination of a visual signal with the rails of a railroad track when the said rails form a portion of the electrical circuit, which includes the electro-magnet or magnets which operate the said signal, substantially as and for the purpose herein specified.
4. The combination of the circuit closer w w' with the electrical circuit 4 5 6 H H' G, substantially as and for the purpose herein specified.
5. The combination, with the electrical circuit composed of wires and the ordinary rails of a railroad track and the axles and wheels of a railroad train, of an electro-motor for operating a visual signal or an audible alarm, either or both, substantially as and for the purpose herein specified.
6. An electro-motor, composed of the stationary magnets S S and S' S', the revolving magnets T T and T' T' and the commutators X and X', when said magnets T T and T' T' are arranged at right angles to each other, and operate substantially in the manner herein specified.

No. 129,526.—SIGNAL APPARATUS FOR DISTRICT TELEGRAPHS. Edward A. Calahan, Brooklyn, assignor to the American District Telegraph Company, New York.

Several signal wheels in same circuit, for giving notifications of different wants, brought into action by switch.

1. Two circuit breaking wheels, b and b', upon the same shaft, in combination with the circuit closing springs c and 10 and a switch, x, arranged substantially as specified, so as to give one of two signals at the distant station, substantially as set forth.
2. The finger key s and stop 4, in combination with the circuit breaking wheels and their springs, substantially as and for the purposes set forth.
3. The key w, in the shunt of the main line, in combination with the electro-magnet, also in the main line, and the circuit closing wheels b b', substantially as set forth, for testing whether the main line is clear, without interrupting the same, substantially as specified.

No. 129,607.—CURRENT REVERSER AND CIRCUIT BREAKER. John E. Smith, New York.

Two batteries thrown into same circuit alternately in opposite directions—secondary circuit, with rheostat included—introduced to lessen spark.

1. The combination of two batteries with a circuit and a circuit breaker, when said batteries have their poles arranged in relation with the circuit, substantially as described, and for the purpose herein set forth.
2. The combination, with a circuit breaker, of a branch or derived circuit or circuits, one or more resistances, and one or more supplemental springs, essentially as and for the purpose specified.
3. The resistances R R' and springs s s', in combination with the two batteries B B' and circuit breaker, substantially as described.

Recent British Patents.

No. 2,233.—W. R. Lake, Southampton Buildings, London. AN IMPROVED ELECTRO-MAGNETIC MOTOR ENGINE. Dated August 25th, 1871.

The engine has four sets of magnets, so arranged together and with other parts of the motor as to produce a repelling and attracting power, giving useful motion. Also, a compound commutator, composed of springs and terminals, by which the direction of the current is changed exactly at the points required; or a simple commutator switch, composed of studs, plates and other parts. The condenser is constructed with a series of thin plates, with sheets of insulating material between them, to prevent contact, the alternate sheets being connected at their opposite ends. The governor is composed of a spindle, cylinder, rings, springs, weights, and other parts.

No. 2,418.—J. L. Clark, 5 Westminster Chambers, Victoria street, and Mulroad, J., 159 Crescent, Camden road, Middlesex. TELEGRAPH INSTRUMENTS. Dated September 14, 1871.

An apparatus for recording telegraphic signals on a travelling strip of paper or other fabric. An ink vessel, preferably of spherical form, balanced upon two axles or knife edges, is provided with a marking tube, as described in patent No. 1861, 1870, and set in motion by an electro-magnet. A method of removing the paper from the end of the marking tube when not in use, and various methods by which the ink vessel may be kept full.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, AUGUST 24, 1872.

Premiums and Commissions.

We have decided to make a slight change in the terms of subscription for THE TELEGRAPHER. For the future the "Club terms" are done away with. But few subscriptions are now made in this way, and the club system is more trouble and annoyance to us, our agents and subscribers, than it amounts to. Single subscriptions will remain as before, at \$2 per year, payable in advance.

We shall not at present offer any long premium list, but will make the following premium proposition: For four subscriptions to THE TELEGRAPHER, at the regular subscription price for one year, we will send a copy of the paper free to the person sending us the subscriptions.

For ten new subscribers we will give, as a premium, PICKETT's Memorial Bust of Prof. S. F. B. MORSE. This bust is what is termed cabinet size, and is finished after the style of the celebrated ROGER's groups, and a superior work of art.

To those who may interest themselves in procuring subscriptions, we will allow, in lieu of the above, for new subscribers, 20 per cent. upon the amount collected, which may be retained in cash, or will send any books or instruments that may be desired for the amount of commission as a premium.

We trust that these propositions will meet with approval, and that the friends of the telegraphers' organ will at once use their best exertions to secure a handsome addition to our subscription list.

The Proposed Enlargement of The Telegrapher.

We last week announced our desire to enlarge THE TELEGRAPHER materially at the commencement of the next volume, with the new year, and our intention of so doing if the telegraphic fraternity respond to our appeal for an increase of the subscription list to a sufficient extent to warrant incurring the additional expense, which will necessarily be considerable. We trust that every friend of the telegraphers' organ will make this a personal matter, and coöperate with us to insure this increase.

We do not propose, in any event, to increase the subscription price of the paper. It is now sufficient, with such an increased number of subscribers, to make it a paying concern, even in the proposed enlarged form. Rather than add to the cost of the paper to its subscribers we should prefer to keep it at its present dimensions.

The advantages of an enlargement must be apparent, and would inure to every subscriber. We could give much valuable matter, which we are now obliged to omit for want of space, and could afford additional room for the discussion of matters of importance to all interested in telegraphic matters.

It should be remembered that THE TELEGRAPHER is the only publication in the world established by practical telegraphers, maintained by them, and conducted in their interests. For more than eight years this paper has been sustained, and it is to-day in a more prosperous condition than for some years before; there seems to be a more general interest and confidence in it among the telegraphic fraternity, and a better appreciation of its importance to the practical telegraphers. We believe that in the future it will be even more important to the fraternity to have an organ such as THE TELEGRAPHER has always been than heretofore. The number of those engaged in the business is constantly increasing, and the questions arising for discussion and adjustment, connected with the relations between telegraph companies and managers and their employes, will in the future, even more than in the past, require an organ to present and maintain the rights and interests of the latter.

The responses to our statement of last week have already begun to be made in a most encouraging manner. We already receive evidences that the fraternity are disposed to sustain us liberally, but we need the active coöperation of every friend of the paper, and hope to have it.

THE TELEGRAPHER, as the faithful and persistent advocate of the rights of the fraternity, has necessarily incurred the enmity and opposition of a portion of those who are dressed with "a little brief authority" telegraphically, and those little great men of course do all they can to discourage its support and damage its interests pecuniarily. One of these individuals, two years ago, set himself the task of destroying the paper, and in his ignorant arrogance announced to his friends that in three months there would be no TELEGRAPHER to annoy him and fellows of his kidney. The paper still lives, and has since been enlarged, and will, we confidently believe, in a few months be still further materially enlarged. His efforts, and the efforts of those who sympathized with him, failed, of course, as other efforts to destroy the paper have done, and future efforts in the same direction will also fail. The telegraphers of the country are not yet slaves, and realizing the futility of the attempts to coerce them into an abandonment of their organ, active efforts against it ceased some time ago.

We propose to improve the character of the paper as well as its size, and are prepared to expend any reasonable amount of money, as well as of labor, to accomplish this. The extent to which it can be done depends upon the amount of support which we shall receive.

THE TELEGRAPHER, while under its present management, will continue to be a perfectly independent paper. Through its columns telegraphers are at liberty at all times to present and discuss their views upon all telegraphic matters, provided only that their contributions and communications are written in a proper and courteous manner. It makes no difference whether their views agree with those advanced editorially or otherwise. We do not claim to be infallible, and if in any matter we are believed to be wrong, we are open to conviction, and when convinced, shall not hesitate to acknowledge our error.

While THE TELEGRAPHER is in no sense the organ of any telegraph company or organization, we shall as heretofore treat them all with perfect fairness. When we see anything to commend in the management of any company or line, commendation will be given with pleasure; and when there is anything requiring criticism or censure, such will be made without fear or favor. We are in no sense beholden to any telegraph company, and do not intend or desire to be. We rely upon the telegraphic fraternity for support, and shall hereafter, as heretofore, sustain them whenever we believe that their claims are just and right.

As a telegraphic newspaper we claim that THE TELEGRAPHER is the best and most complete published anywhere. But little of interest in connection with telegraphy fails to be promptly recorded in its columns. Its various departments are kept carefully up with the progress of the times, and whenever we see any opportunity for improvement in this respect it is at once made. With a larger patronage, and a more considerable increase, we shall be able to add materially to the value of the paper in this respect.

We have thus presented our case to the telegraphic fraternity, and ask every telegrapher into whose hands this paper may come to carefully consider what we have above written, and if he or she concurs in our views, to at once do what can be done to add to the importance, influence and power of their organ, by securing for it a more general circulation. We are prepared to do our own part in the work, and to make the paper not only a credit to the fraternity whose organ it is, but also a more powerful advocate for them.

We would also once more ask the coöperation of telegraphers and others in furnishing for its columns all matters of interest telegraphically of which they may become cognizant in their respective localities. Information of this character adds greatly to the interest of the paper. We also ask for articles and communications presenting and discussing intelligently electrical and professional topics, statements of any special phenomena that may be observed in the construction or operation of telegraph lines, etc. In short, whenever you have anything that in your opinion would be of interest, make it known through the columns of THE TELEGRAPHER—being however careful, in stating matters of fact, that they are really facts, and not exaggerations, merely based upon facts.

"OLD PROBABILITIES" has been made an L.L.D.

Things not Generally Known.

TELEGRAPHIC readers of the Western Union official organ are truly under obligation to the scientific contributor or contributors to that journal, for the novel information which is of late being imparted to them. Our attention has been particularly attracted to the valuable information contained in an article in the last number of that paper, on the "Progress of the Telegraph." What telegraphic reader of the *Journal* could have been previously aware of the astounding fact that "telegraphic stations must be united by one insulated wire, either carried overland or under the sea?"

Again, we are enlightened as to the method of insulation. "The insulation of land lines is insured by attaching the wires to insulators, fixed on posts, some twenty feet high." This fact is worthy of special consideration, and certainly has never before been generally known. Then, again, we are informed that "insulators are of all shapes and many materials." We were not aware before that at 145 Broadway anything but glass was considered as possessing insulating properties, and although BROOKS, FARMER, VARLEY and other unintelligent electricians had pretended to use other substances for insulators, we supposed that they were regarded with a contempt which disqualified their productions from recognition even in the columns of the official organ. However, the faith in glass insulators is justified to a certain extent by the subsequent statement that "the insulator most generally used in the United States is made of glass, and is supported by a wooden pin." But, alas! a devotion to truth compels the humiliating confession that even with glass insulators and wooden pins "the leakage in a long line, notwithstanding the best insulation (glass, with a wooden pin,) is considerable." This is accounted for, however, on the cumulative principle, and is evidently not altogether the fault of the glass insulator and wooden pin. "The loss at each post is insignificant, but when hundreds or thousands are taken into account, it becomes decided" (notwithstanding the superior merits of the glass insulator and wooden pin), so that, in extremely wet weather, in some cases merely a fraction of the total current that sets out reaches the earth at the distant station.

We are sure that no telegraph operator, however he may have toiled and worried in his attempts to transmit and receive business over lines blessed with the glass insulator and wooden pin, could have imagined that they were at fault, before this candid statement appeared in the columns of our contemporary.

We are also indebted to our contemporary for the information that the invention of Prof. MORSE is yet in its infancy. We have a faint recollection of having heard something of the kind before, but still it may, to all intents and purposes, be regarded as an original proposition. But what can we say to the further statement that it has "already conferred inestimable benefits upon the people of more than half the globe, without having occasioned a pang of sorrow to a single human being?" The operators who, notwithstanding the boon of the glass insulator and wooden pin, have toiled, fretted and struggled in wet weather to obtain intelligible signals, must certainly have experienced occasional pangs of sorrow. If we are not mistaken, we have heard some of these misguided beneficiaries of glass insulators and wooden pins energetically and emphatically curse the telegraph system and its invention, and the fate that condemned them to work an instrument and a line, notwithstanding the glass insulator and the wooden pin, so provocative of profanity and the cause of so much trouble and annoyance.

We are informed, at the commencement of the same article, that "it is curious that just ninety years after Dr. FRANKLIN identified lightning with electricity, by means of his kite, MORSE should have schooled electricity to send messages almost instantaneously over wire at great distances." Why the ninety years interim should make this curious we are at a loss to imagine. It is said that there is a reason for all things, and perhaps the author of "Progress of the Telegraph" can, in some future number, furnish the explanation of this at present incomprehensible circumstance.

We congratulate the telegraphic readers of the official organ on the novel information which is being imparted to them through that journal. As they become familiarized with these primal telegraphic facts, they may reasonably anticipate loftier scientific flights and more abstruse information, in quantities adapted to their gradually enlightened comprehension.

MORSE MEMORIAL BUST.

Mr. BYRON M. PICKETT, sculptor of the MORSE MEMORIAL STATUE, erected in Central Park, New York, by the Telegraphic Fraternity of the country, has completed a SMALL BUST of the late Prof. S. F. B. MORSE, which has been seen and cordially commended by the family of Prof. Morse and many of his friends.

He will supply copies of this BUST to the TELEGRAPHIC FRATERNITY at the very low price of *FOUR DOLLARS* each. Will forward by Express, C. O. D., if desired.

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Only a few of these remain unsold, and, as Dr. BRADLEY does not propose to engage hereafter in the manufacture of Telegraph Instruments, when these are disposed of no more can be obtained. Parties desiring to obtain them should make immediate application.

One pair of the celebrated and favorite
POPE & EDISON TYPE PRINTERS,
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The popular
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SIGNAL BELL TELEGRAPHS.

A new combination, with Key on same base with the Bell, or otherwise, as may be required. Made under the patent of F. L. POPE.

In an elegant Rosewood Base. Will work circuits of any length. The popular

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PICKETT'S STATUETTE OF PROF. MORSE.

F. L. POPE & CO. have arranged with Mr. BYRON M. PICKETT to receive orders for his

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The Bust may be seen at our office, 194 Fulton Street, New York. Price, \$4. Sent, C. O. D., if requested.
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This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

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Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

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FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

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UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

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Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
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The Distinctive Features of these Systems of

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ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

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These Features combined form the

Only **PERFECT, COMPLETE** and **RELIABLE** System

OF

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It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM

[AND

POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original **FARMER & CHANNING PATENTS**, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

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has met with the universal approbation and commendation of the

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AND THE

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throughout the UNITED STATES and CANADA.

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is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

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of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION OF CANADA,

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but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

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The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

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Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

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A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

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These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

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SUBTERRANEAN & AERIAL WIRES,

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We are now prepared to furnish, after an experience of three years, an Insulated Wire, which can be buried in the earth or exposed to rain and sun, or to the vapor of acids, without injury. Professor SILLIMAN, who has exposed it to the most destructive agencies, finds that it remains uninjured in an atmosphere of ozone, which would destroy gutta-serena in a few hours. It exceeds glass or any other known substance as a non-conductor.

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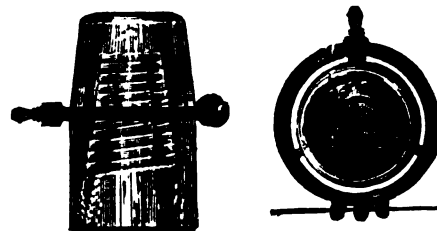
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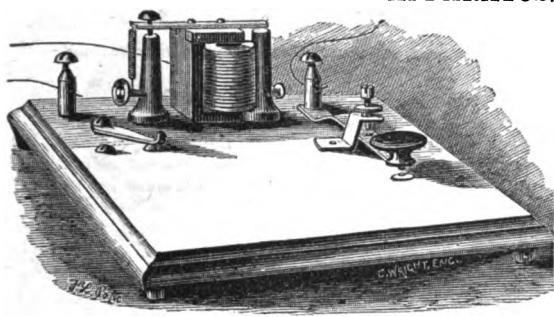
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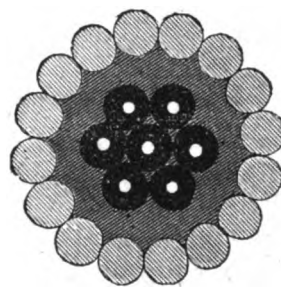
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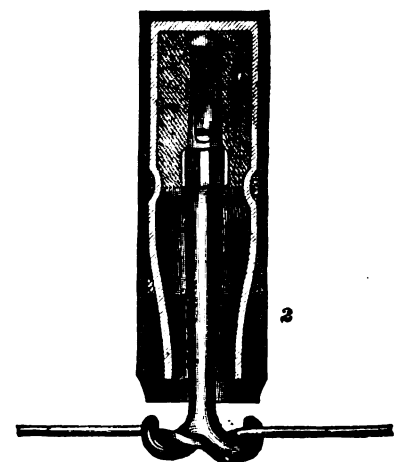
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THE electro-chemical press, of which we give an illustration, presents a very pretty and very happy application of certain scientific facts. This consideration, with the practical utility claimed for the invention, renders it, therefore, doubly interesting.

This neat little apparatus consists essentially of a press (a copying press in our engraving), a polished plate of metal, a battery or other source of electricity, and certain chemicals, and is operated as follows:

The surface of the polished iron plate is covered with some species of varnish which dries rapidly, and resists the action of the chemicals employed. The plate is then written upon with a stylus, which scratches off the varnish and exposes the plate. One or more sheets of copying paper, impregnated with a solution of ferrocyanide of potassium, are then placed upon the plate, and the whole put into the press. The upper platen, communicating with one of the poles of the battery, is then forced down—the varnished plate being connected with the other pole. The pressure causes contact between the exposed portions of the varnished plate—that is, the forms of the letters scratched in the varnish—and the paper which is in contact with the upper platen; a circuit is established and a metallic transfer takes place, reproducing in blue upon the paper the letters traced upon the varnished surface.

The whole operation occupies but a few minutes, and may be repeated indefinitely.

The utility of such an apparatus in all bureaus and offices where it is necessary to reproduce with promptitude any considerable number of copies of orders, circulars, etc., is easily comprehended.

It allows the use of very thin paper, such as ordinary copying paper, adding but little to the weight of letters in which such copies may be transmitted; and the fact that the handwriting itself and the signature of the writer are reproduced, may be of value in certain commercial transactions.

It is stated that the process has had great success in England since its introduction, and has been used, if we mistake not, to some extent in this country.

The New System of Automatic Electric Railway Signals.

THE Pennsylvania Railroad Company has recently equipped a section of its track between Pittsburg and East Liberty, Pa., with F. L. Pope & Co.'s system of automatic block signals. The object of the arrangement is to preserve a certain absolute interval of space between trains going in the same direction upon the same track. This is accomplished by means of semaphoric signals placed in conspicuous positions along the road, at suitable distances apart, varying according to the character of the road and the requirements of the traffic. On the above mentioned section of the Pennsylvania Railroad, where a very large number of trains run, the curves are numerous and the grades very heavy, the signals are placed at intervals of about half a mile.

The machinery of each signal is operated by an electro-magnet, which is connected by wires with a battery placed in the nearest station building or other convenient place, and also directly with the rails of the track. A section of each line of rail, consisting of two or three lengths, is properly insulated, and the wires attached thereto in such a manner that the wheels and axles of a passing train themselves complete the electric circuit with absolute certainty, no matter how rapidly they may be moving. Thus the passage of each train turns the signal to red. It remains fixed in this position until the arrival of the train at the next signal, which operates in the same manner. A portion of the electric current from the battery employed to turn the signal at each station is conducted back to the last station by a telegraph wire, and serves to reverse the signal at that point and cause it to show white, indicating that the section in advance is clear of trains.

About a dozen cells of Callaud battery are required at each station, which cost but a trifle, either for maintenance or attendance. The simplicity of the apparatus is such that it can hardly be very liable to get out of order, and even then, in almost every contin-

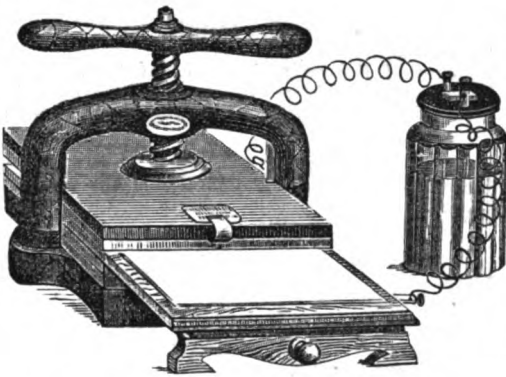
gency that could possibly happen, the danger signal is kept displayed until the fault is removed. Only a single line wire is required for the operator of the system.

Railroad men will doubtless watch the result of this experiment with a good deal of interest. If the system proves an efficient and reliable one, it will beyond question prove of great value as a substitute for the very expensive though efficient block system which is worked in connection with the telegraph upon English railroads, and which is already being used to some extent, in a modified form, upon some of the principal roads in this country.

The great objection to the introduction of this system in this country is the great cost of attendance, as there must be at least two men to each signal station, and on a crowded road signals might be not more than a mile apart. If we can have a system which will signal without signal men, it would seem to be applicable and economical on railroads with average traffic and earnings. The chief requisites are simplicity, absolute certainty in operation, and almost entire immunity from interruption by accident—at least such an arrangement that any accident will be sure to leave the signal at danger.—*The Railroad Gazette.*

Hilgard's Magnetic Survey.

It is a fact, well understood by the unlearned as well as the learned, that in determining the true north line surveyors and civil engineers are accustomed to make certain allowances for what is called "the variation of the magnetic needle;" or, in other words, it is well known that the magnetic needle does not point due north. The extent of this variation differs with different periods of time, and also in different localities on the earth's surface.



Another well known fact, connected with the operation of the magnetic needle, is that when suspended upon a pivot, instead of assuming an exact horizontal position, it has a slight dip towards the north, and that the extent of this dip likewise varies with the time and place. In view of these well known facts it becomes a subject of great practical importance, as well as a matter of great interest to science, to determine the true north line of different points of the earth's surface, in order to know to what extent the needle varies from the true north course, and also to see to what extent the needle dips at different localities.

When the true north line is once established at different points, it will then be an easy matter to note from time to time the slightest difference, either by way of increase or diminution, of the variation of the needle from this true line from year to year. The true north line is found by an astronomic observation, and the process of ascertaining the true meridian line, and measuring the intensity of the magnetic force which controls the variation and dip of the needle, is called a magnetic survey.

Such a survey of the United States, says the *St. Louis Republican*, is now being made by Dr. I. C. Hilgard, under the auspices of the American Academy of Science. Dr. H. has established a station at Compton Hill, St. Louis, and is locating stations in other parts of the country. The variation as well as intensity of the magnetic force is determined by means of a tabular magnet, horizontally poised on a stirrup, which is suspended by a single cocoon fibre in line with the

optic axis of the theodolite, to which a magnetometer box is clamped; the optic arrangement on a position sideways is perceived on the scale of the magnet. This is effected by having a microscopic scale at one end placed in the focus of a lens at the other end of the magnet, causing all the rays of a mark to proceed parallel, but at an angle with the parallel rays of every one respectively. The angle or "dip" of inclination is found by placing the axes of a delicate magnetic needle upon the polished agate supports, approximately in the centre of a graduated vertical or "dip" circle, and in the magnetic meridian. In order to remove eccentricities of axis, imperfections and irregularities in the distribution of magnetism, etc., two different needles are used, and both read with direct and reversed magnetism, and with reversed axes as well as reversed circle, making sixty-four readings on record in all. This gives a very precise means, by eliminating all the inevitable inequalities or instrumental imperfections. The Smithsonian Institute will publish the results of these surveys for the general benefit of the community.—*Scientific American.*

Security against Thieves.

A BOLD bank robbery was committed not long ago at Uxbridge, Mass. The thieves surrounded the cashier's house in the dead of the night, and, by means of ladders, entered the open windows of the second story; they then gagged all the inmates, and compelled the teller, on pain of death, to go with them to the bank and open the safe, which they immediately plundered. Loss, thirteen thousand dollars.

"The moral of the affair is," says *Appleton's Journal*, "that cashiers and tellers of banks must cease to go to bed with their chamber windows open, and that banks in the country must resort to some means of defence and protection more efficacious than the locks of a patent safe. An armed man and a stout dog in the Uxbridge bank would have prevented this robbery, and, in the long run, it would be cheaper for a country bank to pay for a permanent night watchman than to be robbed, even if only once in a generation. The Uxbridge robbery is one of a series of similar outrages which have been perpetrated on the banks of New England during the last five years, and their frequency shows clearly that banks in the country cannot exist much longer in the old primitive fashion, but must fortify and arm themselves if they would keep their treasures safely."

We do not quite agree with the *Journal*. Instead of the dog and watchman our advice to the banks is to make use of the better and surer means of protection which our ingenious inventors have provided in the shape of electrical alarms and detectors. For a tithe of the cost of maintaining a sleepy watchman the Uxbridge bank might have had electric wires attached to its doors and safes, and also to the doors and windows of its cashier's dwelling, so arranged that any attempt of a burglar to enter would have rung an alarm bell and aroused the whole town. Entrance through open windows may be guarded by the use of a fly net, to be connected with the wires. Any attempt to pass the net sounds the alarm. With the other forms of window, door, and safe alarms our readers are familiar. We are never very sorry to hear of a bank robbery where the owners and officers have been so parsimonious as to refuse to employ the best electrical burglar alarms. Many of them turn up their ignorant noses at the idea of using such "patent gimcracks," as they call them, about their premises; but they must either use them or submit to robbery. Some of the heaviest and most astounding bank robberies have been committed upon banks that employed special watchmen, at great expense, who were overpowered by the thieves, or were absent from their posts at the critical moment; but we have yet to hear of a single example of bank robbery where the electric alarm was properly applied.—*Scientific American.*

EVERY one who is interested in telegraphy, and wishes to keep pace with the numerous inventions and improvements in the science, and the land and ocean lines that are built, should subscribe for THE TELEGRAPHER, an able weekly, published in New York. It is now in its eighth volume. Two dollars a year.—*Flake's Bulletin*, Galveston, Texas.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Practical Suggestions for an Organization of Telegraphers.

TO THE EDITOR OF THE TELEGRAPHER.

THE suggestions made by "Old Unionist," in THE TELEGRAPHER of August 17th, are, in my opinion, sound, and based on good judgment. Some kind of an organization that will be a protection to the telegraph operator is a long felt need; and now that the subject has been brought forth and presented to the fraternity for consideration by yourself and several correspondents, it should meet with such action by the operators at large as will carry the matter through with credit to ourselves. I am glad the columns of THE TELEGRAPHER are thrown open to all who take an interest in the advancement of the telegraph operator, and that even a country lad can give his opinion on matters appertaining to his calling. But to the question: I say an organization that will place us upon a solid foundation is one that has long been needed. But what are the first steps that should be taken to achieve this object? What should be the principal purposes of such an organization? 1st. A preamble should be framed and presented to the fraternity through the columns of THE TELEGRAPHER for consideration and debate by them, so that the foundation stone may be perfect. 2d. We need persons to draw up this preamble that know what they are about, and just what kind of an organization is needed.

My other question is, What should be the principal purposes or objects of such an organization? To be brief, I will but give two: 1st. To protect the operator. 2d. To protect the profession. I have before my mind an organization calling themselves the "Brotherhood of Locomotive Engineers" as an example which we might with propriety follow in many respects. I will try to explain what it is. It consists of men known as "locomotive engineers," banded together for the purpose of mutual protection and the protection of their occupation. This body is strong, and spreads all over the United States and Canadas. It is divided into what are called "divisions," which are scattered all over the country, from which "divisions" delegates are sent to meet in general conference once a year. At this convention laws are enacted for the government of the order at large, and also matters considered that will advance their standing as "locomotive engineers."

Their principles are based on the following motto: "Honesty, truth, justice and morality," and these principles are carried out to the letter. I do not know where we could find a better motto for the contemplated organization. Some of the rules for admitting persons into their order are these:

1st. They admit none but those who are thoroughly acquainted with their business, and are good, practical locomotive engineers.

2d. They admit none but those who can prove that they are honest, sober and industrious.

3d. They admit none but those who are willing to pledge themselves to be governed by the laws and rules of the organization, and accord whatever assistance they can to each other in procuring employment, etc.

Members of this organization are very seldom out of employment, and when they are it is not for any length of time—for belonging to the "brotherhood" is sufficient recommendation to procure them situations anywhere. Now, is not this just what we want? And, to make a start, I would suggest that a committee of three be appointed to procure a copy of the preamble and by-laws of the "Brotherhood of Locomotive Engineers," examine them, and frame a preamble suitable for the organization under consideration, and that this preamble be published in THE TELEGRAPHER for the consideration of the fraternity.

I hope to hear from others on this subject.

F. P. LENTZ, operator L. I. R. R.

Extension of Oregon Telegraph Lines and Increase of Facilities.

ALBANY, OREGON, Aug. 16.

TO THE EDITOR OF THE TELEGRAPHER.

SINCE my last communication was written several things have occurred which may probably be of interest to our friends in the east, who, no doubt, like to hear from this, the most northwestern corner of Uncle Sam's domain.

One of these events is the completion of the Oregon and California Railroad to Oakland, Oregon, a distance of 181 miles from Portland. A complete first class telegraph line of two wires has also been constructed along the road. For most of the distance this line is constructed with No. 9 wire and (Chester) glass insulators, and for a distance of about ten miles over the "divide," between the Willamette and Umpqua Valleys, No. 7½ and 8 Johnson wire is used.

The railroad and telegraph line will, without doubt, be finished to Roseburg this fall, which will probably

be the terminus next winter—a total distance from Portland of 200 miles.

The following is a list of officers and operators on the Oregon and California R. R. line:

Charles D. Faling, Superintendent, Portland; Jno. J. Kenny, chief operator, East Portland.

Operators—Frank J. Leahy, Machine Shops; H. C. Stevens, Oregon City; Isaac W. Thurman, Aurora; James Fish, Salem; Geo. F. Crow, Jefferson; Wm. B. Rice, Albany; Charles R. Wheeler, Shedd's; Jas. H. Reid, Halsey; Wm. A. Williams, Harrisburg; Chas. E. Parks, Junction City; H. Rogers, Eugene; Jno. Tucker, Cresswell; J. H. Brown, Comstock's Mills; Jno. P. Lennert, Drain's; Wm. W. Skinner, Oakland, and Isaac P. Fish, Umpqua Bridge.

On the lines of the Western Union Company in this section everything is running along smoothly. The office at Cartwright's, Oregon, of that line, has been closed.

The following is a list of the officers and operators on the Oregon Steam Navigation Co.'s telegraph line up the Columbia River:

D. Leahy, Superintendent, Portland.

Operators—S. B. Jones, Cascades; Wm. C. Gardiner, Dalles; Jno. S. Schenck, Umatilla; T. J. Peabody and — McDonald, Wallula; and James Henderson, Walla Walla.

It is intended ultimately to extend this line to Idaho and Montana.

I have pretty good chances (as Californians say), and expect soon to forward to you another good sized subscription list. WEBFOOT.

A Puzzled Telegraph Customer.

TO THE EDITOR OF THE TELEGRAPHER.

I WAS greatly amused the other day at the idea of an old gentleman, who strayed into my office to send a message. It was a new experience, evidently, and I was obliged to listen to an outline of family history for many years past before I could find out what he wanted; at length the fact was elicited that he wished to send a message to his sick daughter, "Susan," in a neighboring town. "You write it," said he, "Ask her if she's dead yet!" So I did—with a little modification. It appeared, however, that Susan "still lived," and she presently answered to that effect—sending her message collect.

Meantime he had been watching the wires intently, and when I told him his answer had arrived, regarded it with great suspicion, "I didn't see it come," said he, "I don't believe there's anything in there"—meaning in the envelope.

I assured him it was all right, and he finally paid for it, and was delighted when he found I had not deceived him. But something was on his mind, for he still lingered—at length he burst out suddenly, "Say," said he, "how did it get in there?" QUIET.

Personals.

Mr. C. H. FOSTER has been appointed Superintendent of the telegraph lines belonging to the Indianapolis, Bloomington and Western Railway, vice T. G. GOLDEN, resigned.

Prof. TYNDALL, the celebrated English scientist, proposes to visit the United States the coming autumn.

Mr. GRANVILLE G. STEWART, formerly at Eugene, Oregon, on the O. C. R. R. telegraph, has accepted a position in the Yreka, Cal., W. U. office, vice BERRY, resigned.

Mr. BARNES, late of Memphis, Tenn., has accepted a position with the Pacific and Atlantic Telegraph Co. at New Orleans, La.

Mr. T. L. ROSE, formerly of the M. & O. R. R. office at State Line, Miss., has been appointed manager of the M. & O. R. R. office at Enterprise, Miss.

Mr. A. W. ORTON, formerly a telegraph operator at Rome, N. Y., is now successfully engaged with his father in the furniture business in that place, under the firm of J. M. ORTON & SONS. They occupy and own the fine building known as Spencer Hall Block, on Dominick street, in that city.

Mr. W. G. BEERS has been appointed agent and operator on the Alabama Central R. R. at Macon, Alabama.

Mr. A. S. ROYAL has been appointed agent and operator at Belleville, on the Alabama Central Railroad.

Mr. W. S. MAYNARD has resigned his position as operator for the Selma, Rome and Dalton Railroad, at Selma, and accepted a position on the Alabama Central Railroad as conductor.

Mr. J. N. WARD has been transferred from Meridian, Mississippi, to Demopolis, Alabama, as agent and operator for the Alabama Central Railroad.

Mr. R. D. WILLIAMS, of the night force of the W. U. Chicago, Ill., office, has resigned and gone West, to accept a situation with the Union Pacific R. R. Co.

Mr. WILLIAM M. BENNETT, of the W. U. Chicago, Ill., night force, has resigned, and accepted a situation with the Montreal Telegraph Co. at St. Catharines, Canada.

Messrs. D. KEARNEY, CHAS. L. DEFOREST and E. G. FOOTE, of the night force of the Western Union Chicago, Ill., office, have resigned, and accepted situations on the day force of the Pacific and Atlantic office in the same city.

Mr. E. G. JOHNSON, of the night force in the Chicago, Ill., W. U. office, has resigned, to engage in other business.

Mr. E. O. WAITE, formerly Superintendent and Manager of the Atlantic and Pacific Co., has accepted a situation with the Western Union Co. at Chicago, Ill.

Messrs. EDWARD LOMASNEY and T. D. PITCHER, formerly of Logansport, Ind., and CHARLES MIXER, formerly of New Orleans, La., have accepted appointments in the Chicago, Ill., W. U. office.

Mr. HARRY GARNER, formerly of Lockland, Ohio, has accepted a situation in the Western Union office at Chicago, Ill.

Mr. W. S. LEWIS has resigned from the Pacific and Atlantic, Chicago, Ill., office, and accepted a situation in the Western Union office in the same city.

Messrs. JOHN P. WALKER and P. MCKEON, from the Omaha, Neb., Western Union office, have received appointments in the Chicago, Ill., office of the same company.

Mr. M. A. LAWSON, formerly of the Michigan Central R. R., has accepted a situation in the Chicago, Ill., Western Union office.

Mr. JOHN Q. MASON, formerly of the Western Union Stock Yards office at Chicago, Ill., who has been at Peoria, Ill., for several months past, has returned to Chicago and accepted a position as night report operator in the Western Union office.

Mr. GUS. CARROLL, of the day force of the Western Union Chicago, Ill., office, has resigned on account of ill health.

Mr. R. R. MANNERS, of the day force of the Western Union Chicago, Ill., office, has resigned, to engage in other business.

Mr. JAMES P. MCCLURE, formerly of the Western Union St. Louis, Mo., office, has taken a position on the day force of the Chicago, Ill., office of the same company.

Mrs. A. L. NICHOLS, has accepted an appointment on the day force of the Western Union Chicago, Ill., office.

Miss MYRA J. DEXTER has been appointed to fill the position of operator of GRAY'S Printer on city line, vacant through the resignation of Mr. GUS. CARROLL.

Mr. M. McCULLOCH has been transferred from the Milwaukee, Wis., to the Chicago, Ill., Western Union office.

Mr. L. H. LONG has been promoted from night check clerk, main office Western Union Company, Chicago, Ill., to be operator of the Grand Central Hotel branch office of that Company.

Mr. JNO. O. FOWLER has resigned his situation in the clerical department of the Western Union Chicago, Ill., office, to accept the management of the Atlantic and Pacific office in same city.

Submarine Cables.

THE public are, we perceive, at length beginning to appreciate the value of the shares of the submarine cable companies, and are becoming conscious of the fact that this description of property is singularly free from those objections which have been recently urged against railways, on the ground of increased working charges and the great advance in the price of materials. There is no outlay required on existing cables for the three great items of expenditure on railways—coal, iron and copper. The cable, when completed, does not require any continuous renewals, and it is not worked by any power which has seriously increased in price. The working charges are simply those required for transmitting the messages at either end of the cable, and any increase on this head simply represents the proportionate increase of business transacted. All the cables are just now doing a very lucrative business, and, by the amalgamations among themselves which have been effected, a guarantee against risk of accident has been provided, which should materially enhance the value of this description of property. The prospects of the "Submarine Cable Trust" and the "Share Investment Trust" have greatly improved by this arrangement, as it renders still more secure the investments of these companies in this description of property. The "Eastern Telegraph" shares now represent the combined interests of a number of companies which, formerly separate and isolated, were exposed to a risk which is now covered by a principle of practical insurance against loss by accident. The interest on the preference shares of the "Share Investment Trust" is, it is stated, already covered by the interim dividends paid by these companies, and which are usually much less than the whole dividends for the year; and, in addition to this, the receipts for these and the other well selected investments are coming in at a rate which will give the deferred shares of the "Trust" a dividend at the end of the year.—*The Railway News*.

The Telegraph.

The Telegraph in Australia.

SYDNEY, N. S. W., July 5, 1872.

I AM at length enabled to announce the fact that the Indo-Australian Company's cable, after lying idle for months at the bottom of the Java Sea, has been utilised.

Ere this letter reaches the Empire City news transmitted by it from the antipodes to the older world will be familiar to the readers of the *Herald*, and many will suppose that communication by wire is complete to the capitals of Australia; such, however, is not the case. On the 20th ult. a despatch was received from Mr. Todd, Superintendent of the land line and construction parties, under date May 22. Mr. Todd was then in Northern Australia, and reported having sent a message through to London and obtained a reply within two days. A gap of 150 miles of the most difficult portion had to be connected, and he anticipated that not before September would it be complete. Three parties were working upon it, but owing to the obstacles which had to be surmounted in transmission of material, rations, etc., etc., progress was very slow. Arrangements were at once made to bring a horse despatch into requisition, and for a time obviate the complaints made by the cable company and the public that the Government of South Australia had not kept faith, though they had a margin of six months between the time they were bound to have their share of the work completed and the present date.

The first telegrams were received for transmission from this end on the 25th ult. When they will reach England is problematical. It is admitted that even when thoroughly completed communication is almost certain to be frequently interrupted, and that at seasons it will be impossible to effect repairs in a reasonable time, so that until there is an alternative cable *via* Queensland very little dependence can be placed upon regularity of transmission.—*New York Herald*.

Foreign Telegraphic Notes.

THE total number of messages forwarded from postal telegraph stations in the United Kingdom during the week ending August 10, 1872, was 320,555—an increase over the corresponding week of last year of 63,657 messages.

An arbitration between the Irish Northwestern Railway Company and the Postmaster General, as to the company's interest in the telegraphs, has been held before Sir J. Napier at the Westminster Palace Hotel, London, and has resulted in the railway company being awarded a sum of £12,000, in addition to a beneficial arrangement being secured by them to the future working of the telegraphs on their system of railway.

The Government of Guatemala has put itself in relation with Mr. Stanley McNider, the successful American telegraph contractor, who has constructed the greater part of the telegraph lines of Salvador, with the object of extending the system throughout the republic of Guatemala. Six lines are required, with twenty-five stations. The total length will be about 500 miles of line. Mr. McNider offers to construct the 500 miles at the rate of \$150 per mile, or \$75,000 for the whole, giving also instructions to forty young men whom the Government will name.

A Telegraphic Blunder and its Consequences.

THE Prior of the Dominican Monastery of Voreppe, in France, recently received the following telegram: "Father Ligier is dead (*est mort*); we shall arrive by train to-morrow at three. LABOREE."

The ecclesiastic, being convinced that the deceased, who was highly esteemed in the locality, had selected it for his last resting place, made every preparation. A grave was dug, a hearse provided, and with the monks a sorrowing crowd waited at the station for the train. It arrived, and, to the astonishment of every one, the supposed defunct alighted, well and hearty. The matter was soon explained. The reverend father, returning from a visit to Rome, where he had been accompanied by the priest Laboree, stopped to visit some monks at Saint-Jean-de-Maurienne, and requested his companion to telegraph the return to his monastery. The message sent was: "Father Ligier and I (*et moi*) will arrive," etc. The clerks inadvertently changed the *et moi* into *est mort*, with what result has already been told.

The Romance of the Telegraph.

MR. FRANK IVES Soudamore, the Superintendent of the Government telegraphs in Great Britain, in his recent report becomes quite romantic in his description of the success of the system of employing male and female operators. Mr. Soudamore, after showing how much the tone of the men has been raised by the association, and how well the women perform the checking or fault-finding branches of the work, goes on to speak of the friendship formed between clerks at either end of the telegraph wire. They begin by chatting in the intervals of their work, and very soon become fast friends. "It is a fact," continues Mr. Soudamore, "that a telegraph clerk of London, who was engaged on a wire to Berlin, formed an acquaintance with and an attachment for a female clerk, who

worked on the same wire in Berlin—that he made proposals of marriage to her, and that she accepted him without having seen him. They were married, and the marriage resulting from their electric affinities is supposed to have turned out as well as those in which the senses are more apparently concerned." These young clerks, however, were not very rash, nor did they marry without due acquaintance with each other, as many prudent persons might suppose—for, according to Mr. Soudamore, a clerk at one end of the wire can readily tell, by the way in which a clerk at the other does his work, "whether he is passionate or sulky, cheerful or dull, sanguine or phlegmatic, ill-natured or good-natured."

Humors of the Telegraph.

THE following is given as the result of an attempt to telegraph an extract of Livingstone's letter to Milwaukee. As received it read: "Webb's Lualaba, near Lake Moera and Komolondo, Bartle Freres or Lufira, is undoubtedly a Locustrine Bahar Ghasal, notwithstanding Speak's Maize on fatter saccharine, palm toddy, banana beer range, canabes, baked gnats, stuped elephant, gokos and gorillas. Hemistram, cassava, sweet potatoes, and yams furnish farinaceous food, and expert hunters yield in no stinted measure nitrogenous ingredients for human food."

Miscellaneous.

HOW TO TREAT BATTERY ZINCS.—The best rolled zinc should be employed; it gives a higher force than cast zinc, and is more economical, because cast zinc is subject to much more local action, owing to its porous condition. Cast zinc rods may be used with equal advantage in cells where they are only exposed to sulphate of zinc, or chlorides of sodium or ammonium, because these do not act by themselves on zinc.

The coating of zinc with mercury prevents the local action of the acid; it appears to effect this by giving a smooth surface, and so favoring the adhesion of hydrogen, which may be seen covering it in little bubbles; therefore, anything which tends to roughness of surface tends to increase local action and waste of zinc and acid—a point the learner should carefully fix in his memory as an axiom. The practical lesson is: keep your zincs thoroughly clean and well amalgamated. Care should be taken to use only pure mercury; much of that sold contains lead and tin, which are mischievous. The mercury should be kept for some time in a bottle, with dilute nitric acid over it, and occasionally shaken up. To amalgamate zinc wash it first with strong soda, to remove grease; then dip it in a vessel of water containing one tenth of sulphuric acid, and as soon as strong action takes place transfer it to a dish (such as a soup plate); pour mercury over it, and rub it well till a bright silver like film forms, then set it up to drain on edge, and before use rub off any globules which are set free. Whenever the zinc shows a gray granular surface (or rather before this) brush it well and reamalgamate, remembering that saving of mercury is no economy, and free use of it is no waste, for it may all be recovered with a little care. Keep a convenient sized jar or vessel solely for washing zincs in, and brush into this the dirty gray powder which forms, and is an amalgam of mercury with zinc, lead, tin, etc., and forms roughnesses which reduce the protection of amalgamation. Let this powder collect for a time and then transfer it to a bottle, in which wash it with sulphuric acid first, and then with dilute nitric acid, and you will recover the mercury. This washing should be done whenever a plate is removed, and never less than once a day if in regular use; the cheap brushes are excellent for these purposes, but of course must not be left soaking with acids.

M. MORIN'S ELECTRIC PILE.—This has been designed by the inventor to obviate the inconvenience resulting from the deposit of zinc on the copper, or on the porous vessel, that takes place in the ordinary sulphate of copper pile. A zinc cylinder is placed concentrically within a copper cylinder, and the latter is surrounded by a cylinder of filter paper, replacing the porous cell. Between the copper and the paper is placed some rather hard sandstone, and flour of sulphur between the copper and the zinc. The element is immersed in a solution of sulphate of zinc, which penetrates the mass through minute perforations in the copper. Elements thus prepared have been in effective use during twenty months without supervision or attention, and are said to be capable of serving for as long again.

A Singular Occurrence.

A FEW days since the operators in the Western Union Telegraph office, at the Pine street Exchange News Rooms, in this city, were somewhat astonished by the breaking out of a small conflagration underneath the floor in one corner of the office. Water was immediately brought and poured on it, without any apparent effect, and it finally became necessary to cut away the surrounding wood work, which disclosed the fact that the fire was in a cable of cotton covered wire saturated with paraffine, through which the lines entered the office beneath the floor. From some cause, probably lightning, a connection had been formed between two through wires attached to large main batteries at the

general office, and which were connected with opposite poles to the ground. Two large batteries were thus connected and thrown in short circuit, developing an intense heat and setting fire to the inflammable paraffine covering of the wire. If this singular occurrence had happened after the closing of the office at night it might have resulted in the destruction of the building, and the cause of the fire would have remained a mystery. Of course an accident of this kind could hardly have been foreseen, but it serves to point out the necessity of caution in running wires under the peculiar conditions described.

New Patents.

For the week ending July 16, 1872, and bearing that date.

THIRD ISSUE.

No. 129,391.—PRINTING TELEGRAPH. John S. Brown, Washington, D. C.

Two series of magnets, alternately charged, act on vibrating armatures, the printing and feeding mechanisms being brought into action by the same magnets without any reversing of currents.

1. A printing telegraph instrument, the type wheel of which is turned by the alternate action of two electro-magnets, substantially as herein specified.
2. A printing telegraph instrument, the printing hammer of which is operated by the action of the same two magnets that turn the type wheel, in connection with a counter spring or its equivalent, substantially as herein specified.
3. A printing telegraph instrument, in which the paper is fed along by the action of the same two magnets that turn the type wheel, substantially as herein specified.
4. A printing telegraph instrument, in which the union stop is brought into action by one of the magnets that turn the type wheel, substantially as herein specified.
5. A printing telegraph instrument, in which the union stop is released by simply resuming the alternate action of the two magnets that turn the type wheel, substantially as herein specified.
6. The combination of the alternately acting magnets A, B, vibrating armature or armatures F, G, pawls I, K, and ratchet wheel O, or its equivalent, substantially as and for the purposes herein specified.
7. The combination of the armatures F, G, pawls I, K, and stop A, constructed and arranged substantially as and for the purpose herein specified.
8. The combination of the printing armature P with the magnets A, B, substantially as and for the purpose herein specified.
9. The armature F, provided with the arm p and spring r, in combination with the magnets A, B and printing armature P, substantially as and for the purpose herein specified.
10. The combination of the armature F, provided with the hook pawl t and the paper feed roller E, formed as described, and provided with the ratchet wheel s, substantially as herein specified.
11. The combination of the interposed circuit closing plates N and O and the transmitting key L, substantially as herein specified.
12. The additional union key M on the transmitter, arranged and operating substantially as herein specified.
13. The transmitter, provided with the transmitting, union, and printing keys L, M, Q, arranged and operating substantially as herein specified.

For the week ending July 23, and bearing that date.

No. 129,641.—PRINTING TELEGRAPH APPARATUS. George L. Anders, Boston, assignor to E. B. Welch, Cambridge, Mass.

1. A printing telegraph instrument having an electro-magnet, *u*, the vibrating distance of whose armature, *t*, is controlled by the polarity of a current transmitted through the electro-magnet *z* in such a manner that in the shorter vibrating distance of the armature *t* it shall effect the release of the escapement wheel *e*, and in its greater action shall secure an impression of a letter on a strip of paper, *a*, substantially as specified.
2. The escapement wheel *e*, provided with short pins *y y*, *z*, and a long pin, *y'*, so operated that the escapement wheel *e* is released by the action of the electric currents to the desired letter, and is then at once thrown forward to the standard point, regulated by the long pin *y'* on the escapement wheel *e*, substantially as specified.
3. The pallets *s s'* on the bell crank lever arm *p*, arranged as shown, to allow the passage of the pins *y y*, *z*, in combination with the armatures *t* and *w*, substantially as specified.
4. The armature *w*, formed with a double slot, *v v'*, in combination with the polarized magnet *z*, bell crank lever arm *p* and escapement wheel *e*, substantially as specified.
5. The bell crank lever arm *p*, arranged with pallets *s s'* and dog *p'*, connected with and operated by the armatures *t* and *w*, substantially as specified.
6. The cam wheel *g* on type wheel arbor *c c*, in combination with arm *A*, spring *i*, and arbor *k*, so operating the arms *t t'* as to feed along the paper *a*, either with or independently of the transmission of the electric currents operating the press (*s'*) mechanism, substantially as specified.
7. The combination of an electro-magnet and polarized magnet, the polarized magnet controlling the vibrating distance of the armature of the electro-magnet.

No. 129,724.—INSULATOR FOR TELEGRAPHIC USES. Moses G. Farmer, Salem, Mass.

Gives better "bite" to insulating covering used by roughening the insulator.

1. A glass insulator having its surface below the groove roughened, in whole or in part, for the better reception and retention of an insulating compound, substantially as described.
2. A glass insulator having a roughened surface coated, substantially as described.

No. 129,762.—ELECTRO-MAGNETIC APPARATUS. Rudolph Sayer, New York.

Sliding rack graduates movement of circuit breaking armature, regulating intervals between shocks. Switch post and vibrating frame arranged to use either primary or secondary current.

1. A vibratory hammer, D, graduated and combined with a frame, F, vertically adjustable to any one of the steps of said hammer, as and for the purpose set forth.
2. The conductor, magnetic coil and sleeve, in combination with a swivelled post, H, having reversing and connecting arms, as and for the purpose described.

No. 129,839.—AUTOMATIC TELEGRAPH TRANSMITTER. George Little, Rutherford Park, N. J.

Insures electrical contact by providing two contact points in automatic transmitting.

The circuit closer *e* or *f* and lever *b* or *c*, in combination with the roller *i* or *o*, drums *a* and connections, substantially as specified, for closing and breaking a circuit to the main line at two points of the perforated paper simultaneously, substantially as set forth.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, AUGUST 31, 1872.

The Adaptation of Electricity and the Telegraph to General Use.

WHEN the adaptability of electricity to telegraphic purposes became practically known, the most enthusiastic and sanguine of those who were engaged in its development could not have conceived the multifarious uses which it could and would be made to serve within the lifetime of a single generation. Thirty years ago the mere fact that, by means of electricity, intelligible communication could be transmitted between widely separated localities, was regarded as marvellous, and, but for its practical demonstration, not to be credited. As line after line was constructed, and the public became familiarized with its use, the incredulity with which the extravagant claims, as they were regarded, of those engaged in introducing it, abated, and its advantages were gradually conceded. The practicability of communication by means of aerial lines having been established, public credulity was again taxed by the proposition to connect by submarine lines countries separated by thousands of miles of water, by through wires, insulated throughout their whole length and submerged beneath the ocean. The gentlemen who initiated the project for a submarine cable line between Europe and America were regarded as enthusiasts, determined to submerge their fortunes and reputations beneath the oceans whose depths they proposed to span with the electric cord. This, too, after discouragements and failures inevitable to the inception of such an undertaking, was accomplished, and now tens of thousands of miles of electric cable connect the most distant countries, and make them practically, as far as communication is concerned, near neighbors. From the farthest east, from China and Japan, as well as from Europe, the telegraph brings us news daily and hourly; and still the work goes on. But one section remains to be occupied—that between our Pacific coast and China—to complete the telegraphic circle round the earth. That this will be completed in due time there is now no doubt. The interests of commerce demand it, and the success which has attended ocean telegraph enterprises insures it.

These achievements of the electric telegraph are more marvellous than the wildest imagination of the coiners of the fables which compose the "Arabian Nights" ever conceived. Their familiarity to us now causes their marvels to be overlooked or lightly considered, but they are none the less marvellous on that account.

These great achievements having been accomplished, there were others, of subordinate purposes, which electrical science and telegraphic art had yet to realize. The telegraph and electricity are yearly entering more and more intimately into the daily service and convenience of the people. It sounds the alarm and brings speedy succor when fire threatens devastation and ruin. It furnishes to every merchant, broker and business man who desires it, in the more important business centres, a constant record in his own office or counting-room of the condition and transactions of our exchange, and the quotations of leading articles of traffic and commerce. It calls messengers and assistants, when needed, to any locality, at all hours of the day and night. It furnishes communication between the offices, manufactories and places of business of merchants, manufacturers, shippers and others. The editors of our great newspapers can sit in their libraries at home and direct, by means of telegraphs, easily operated by themselves or members of their families, the management of their papers. The liability to danger and destruction on railroads is greatly lessened, and disasters averted, through the use of electrical signals. The engineer, as his locomotive dashes along the iron rail at a speed which outstrips

the wind, can, by a glance at the signal by the road side, know the condition of the line for miles ahead, and whether other trains are likely to be encountered, or misplaced switches and open drawbridges invite him to death and destruction. Our bells are rung by electricity, our clocks are regulated by the electrical current, the fidelity of watchmen is assured, or their lack of vigilance recorded with unfailing accuracy by the electrical tell-tale. The concealed wire and electric circuit betray the operations of the burglar and thief, and our gas is lighted by electricity.

The uses to which the electric current and the telegraph have been and shall yet be adapted, are so numerous as to even now surpass our comprehension. It is the mightiest agency of modern times, the true wizard's wand, which manipulates and controls the affairs of mankind.

In the science and administration of this mighty agency many thousands of people are constantly engaged, and their number is yearly and almost daily augmented. They constitute a large community, and upon their intelligence, capacity and fidelity the most momentous and important interests constantly depend. It is of the first importance that they shall be properly educated and prepared for the business in which they are engaged. It is important to every telegrapher, especially, that he should seek to acquire knowledge and information which shall enable him to profit by the constant development of new adaptations of the science and art to advance and benefit his condition. It is but a poor and indifferent disciple of the telegraphic art who will be content with knowledge of the merely mechanical portion of the business. Those who look no further than to acquire facility in manipulation of the key and the reading of telegraphic signals, are in no true sense telegraphers. While all cannot expect to become FARADAYS, HENRYS, WHEATSTONES or FARMERS, yet it is possible for all to become more familiar with electrical science and the theoretical and practical elements of telegraphy. Those who, by study, application and observation, shall fit themselves for the higher branches of their profession, will, in the brilliant future which unquestionably awaits electrical development, stand the best chance for progress and advancement. This is a matter worthy of the serious consideration of every person who has made or designs to make telegraphy the profession or business of future years. We commend it to the serious and earnest consideration of every present or prospective telegrapher who may read our words. It is for their benefit that we urge upon them the effort to acquire a higher and better knowledge of their art, and the science upon which it is based.

It is impossible even now to predict what advances and discoveries may yet be made in electrical science and telegraphy. Astonishing as these have already been there is undoubtedly much yet to be learned, and new adaptations will continue to be made, and those who would profit by them professionally must be diligent and persevering in their studies and efforts to acquire and maintain an advanced state of knowledge and information: In science and art there is no royal road to success.

Magneto-Telegraph and Electric Clocks.

THE advertisement of E. HOWARD & Co. of the Magneto-Dial Telegraph, Electro-Magnetic Watch Clocks, Electric Clocks, etc., will be found of interest, and is worthy of attention. Mr. J. HAMBLER is the electrician of the company, and gives his personal attention to all electrical work, the manufacture of instruments, putting in operation of electrical clocks, etc. His ability as an electrician and mechanic are a sufficient guaranty that all work done under his supervision and direction will be of the best and most satisfactory quality.

The Magneto-electric Alphabetical Dial Telegraph is a beautiful instrument, and possesses many elements of superiority. It has already been extensively adopted in different sections of the country, and has given entire satisfaction. It is simple, reliable, economical, and a most rapid alphabetical telegraph, requiring no battery, and we have no hesitation in recommending it for all the purposes for which it is offered.

It may be seen at the office of F. L. POPE & Co., No. 194 Fulton street, and orders will be received by them for it.

Literature.

The Road Master's Assistant and Section Master's Guide. By WILLIAM S. HUNTINGTON. Second edition. A. N. KELLOGG & Co., 72 Broadway, N. Y. 1872.

THE TELEGRAPHER has already a considerable number of railroad superintendents among its readers, to say nothing of a good many operators and despatchers, who cherish hopes of occupying that important and responsible position at some future day. All such will thank us for directing their attention to this remarkably excellent little treatise upon the art of laying and repairing railroad track. Within the space of 144 small pages is compressed more practical information and sterling common sense than we ever before saw put into the same space. Mr. Huntington is a thorough master of his subject, and wields his pen in the same forcible, direct, and precise manner in which he has evidently been accustomed to handle the spike hammer and the tamping bar. If this unpretending little book is as generally circulated, read and appreciated among railroad men as it ought to be, a vast amount of property and many lives will be saved, and the number of unaccountable "accidents" reduced by a notable percentage. Sent post paid for \$1 by the publishers, as above.

Facts and Inferences Relating to Lightning and Lightning Rods. By DAVID BROOKS. Philadelphia Franklin Institute. 1872.

The author of this pamphlet is well known as one of the leading electricians in America, and an occasional contributor to the columns of THE TELEGRAPHER. The little book before us is a reprint of a paper read before the Meteorological section of the Franklin Institute. Mr. BROOKS is the first person, as far as we are aware, to investigate the principles which govern the action of atmospheric electricity upon lightning rods, in accordance with the well settled laws of electrical accumulation and conduction, which have themselves but recently come to be well understood and appreciated. We have no space to follow Mr. BROOKS in his demonstrations, which are eminently clear and forcible, and, to the mind of an electrician, perfectly convincing.

Some of the conclusions he has arrived at may, however, be briefly stated. The universal defect of all the lightning rods in existence, with scarcely an exception, is in their defective electrical connection with the earth. Mr. BROOKS shows that as the conductive power of water, compared with iron, is as one to one thousand million, it is necessary that the ground plate should expose a surface as large as that covered by the building itself to insure adequate protection. In cities and large towns this is easily accomplished by attaching the conductors to the gas and water pipes. Unless at least a hundred square feet of metallic surface can be laid in a spring or body of water Mr. BROOKS considers that a building is safer without a rod. He disposes of the prevalent fallacy that the utility of a lightning rod depends upon the conducting surface of the rod itself, and that it must be insulated from the building.

The pamphlet is an exceedingly able one, and will well repay perusal. It may be obtained by remitting 25 cents to the Librarian of the Franklin Institute, Philadelphia, Penn.

Testimonial Well Bestowed.

UNDER this complimentary heading the *Clarksville (Tenn.) Chronicle* notices the presentation of a beautiful set of telegraph instruments, by the operators of the Clarksville Division of the Louisville and Nashville and Great Southern Railroad, to Mr. T. C. HARVEY, train despatcher. The *Chronicle* says:

"Mr. Harvey has for the past four or five years held, and still holds the responsible position of train despatcher on the Clarksville Division, having, under Mr. Meeks' supervision, the management of the running of trains by telegraph. During his connection with the road it is but just to say that he has proved a faithful servant of the company, and no accident has yet happened through any mismanagement or neglect on his part.

"Personally, we can bear testimony to his extreme courtesy at all times, and we are glad to know that his coworkers have presented him this really beautiful testimonial, to which his merits as a gentleman and operator so justly entitle him."

Flaminio Olympiothanes Agrippa Williams sets type in San Francisco.

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in the world. It has already been extensively adopted, and has invariably given entire satisfaction.

The also manufacture and put up

THE ELECTRO-MAGNETIC WATCH CLOCK,
which is the best watchman's time recorder in the world. Also,
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OF ALL KINDS.

All instruments and work from this establishment guaranteed to give satisfaction.

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The undersigned have on hand, and for sale on favorable terms, the following Telegraph Instruments and Apparatus:

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A new combination, with Key on same base with the Bell, or otherwise, as may be required.

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Richmond, Va.,
St. Louis, Mo.,
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ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

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These Features combined form the

Only **PERFECT, COMPLETE and RELIABLE** System

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IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

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[AND

POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. **GAMEWELL & CO.** are the owners of the original **FARMER & CHANNING PATENTS**, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

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has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

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RELIABILITY and

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ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION OF CANADA,

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but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

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A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

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 T E L E G R A P H E N G I N E E R,
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These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

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a most compact and reliable switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

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SUBTERRANEAN & AERIAL WIRES,

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We are now prepared to furnish, after an experience of three years, an insulated Wire, which can be buried in the earth or exposed to rain and sun, or to the vapor of acids, without injury. Professor SILLIMAN, who has exposed it to the most destructive agencies, finds that it remains uninjured in an atmosphere of ozone, which would destroy gutta-percha in a few hours. It exceeds glass or any other known substance as a non-conductor.

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ALSO, TO FURNISH

IRON CLAD CABLES,

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We shall be happy to furnish estimates for any amount and size of cable, which will be found to compete with any other construction, both in quality and price.

We manufacture the Genuine ELECTROPOION BATTERY, with Patent Platina Connection, introduced by us eight years since; also, THE ALPHABETICAL OR DIAL TELEGRAPH, now extensively used in this and other cities for private lines, being easily and quickly learned by any one.

We offer for sale, among other novelties, a SOUNDER that will work practically with a single DANIELL cell, a BATTERY that does not require to be taken down but once a year, and the very best MAIN LINE SOUNDERS made.

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" " Mechanical " " "

" " " " for striking large Bells.

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An egregious case of humbug of this sort has recently come to our knowledge, and the party thereto will be prosecuted.

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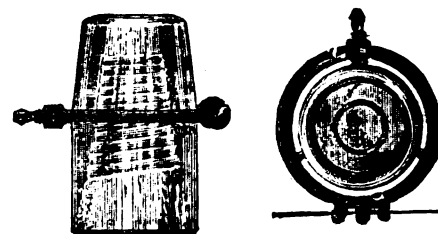
By Mr. HICKS.

Address,

4 LEADER BUILDING, SUPERIOR ST.,

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C H E S T E R ' S P A T E N T I N S U L A T O R .



The undersigned solicits examination of some of the reasons which have induced him to recommend to his patrons and friends the Insulator exhibited above as the best and cheapest in use.

Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal.

As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREAKDOWN.

T E L E G R A P H W I R E .

The attention of

Telegraph Companies, Superintendents and Line Builders is called to a

New Article of TELEGRAPH LINE WIRE

OF UNEQUALLED QUALITY AND UNIFORM EXCELLENCE.

While great care and attention has been given to Instruments and Insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European Governments, only fit for fencing purposes. Many tons of such material now remain here, utterly unsaleable and unfit for use.

The researches of the able electricians of Europe have resulted in establishing a standard of excellence for Telegraph Wire far exceeding that with which we have heretofore been satisfied.

We extract from the minute and specific details a few of the requirements of a

S T A N D A R D G O V E R N M E N T W I R E .

1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable, and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be coiled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications a breaking strain of 1,200 pounds or No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

We now offer for sale this Uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market, to which this system of tests is uniformly applied.

We shall designate it by the Trade Mark,

CHESTER, A 1,

and our customers ordering it may be sure of receiving an article always uniform, and always the very best.

The capacity or endurance of No. 9 is 21 to 23 TWISTS UPON ITSELF in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

C O M P A R A T I V E A N D C O M P E T I T I V E T E S T S

with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

T H E C H E S T E R , A 1 , W I R E

never broke at less than 21 twists, and once at 22. The omission of the elongating process would increase the flexibility and the tenacity.

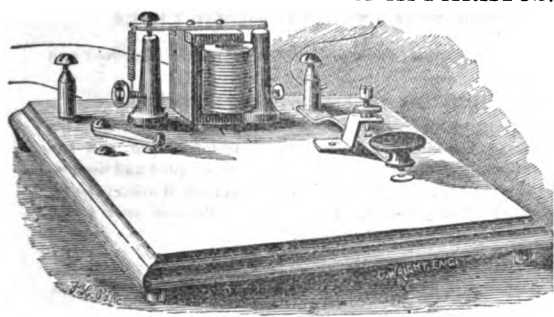
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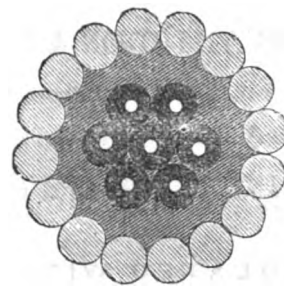
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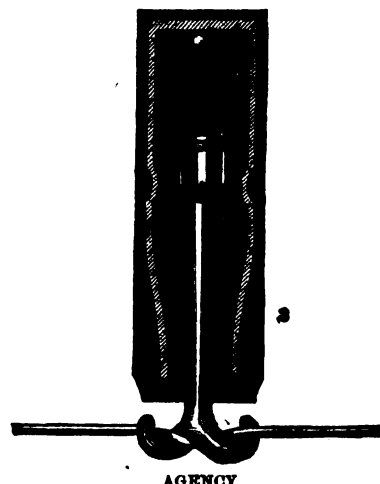
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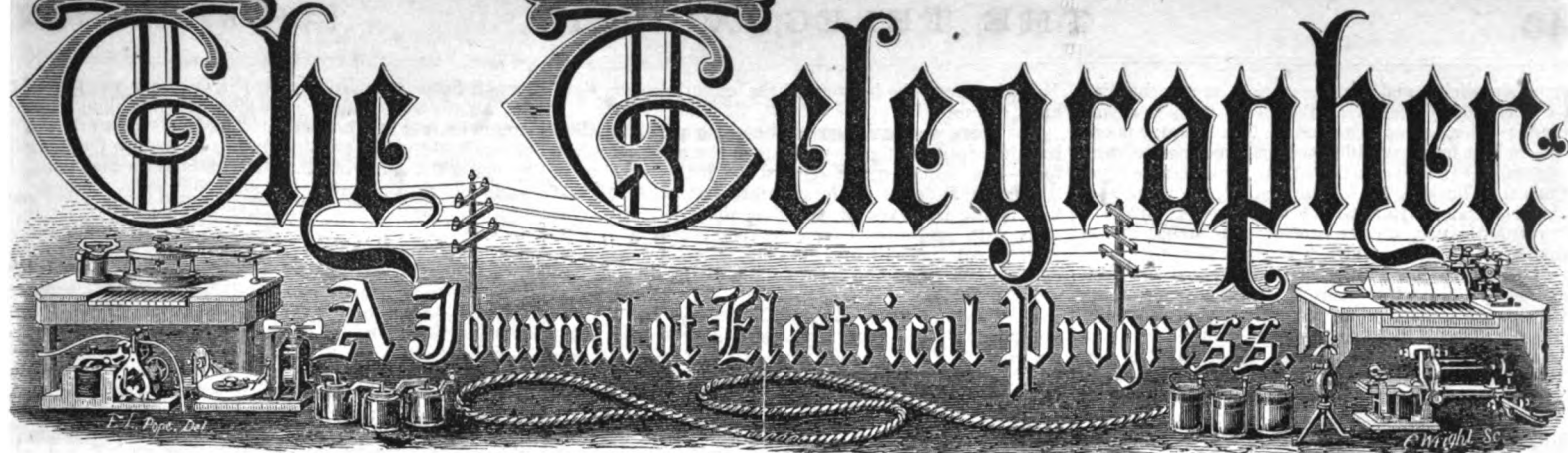
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SIEMENS BROTHERS.



Vol. VIII.—No. 56.

New York, Saturday, September 14, 1872.

Whole No. 322

"Old Probabilities."

THE *Boston Transcript* prints a poem by Mr. John J. Glover which will bear repeating:

Who warns us of the coming storm,
And hints of currents cold or warm,
Which may affect the human form?
Old Probabilities.

Who tells the farmer when to sow,
To plough, to plant, to reap or mow,
That Plenty may her gifts bestow?
Old Probabilities.

When men go on the sea in ships,
Who telleth with prophetic lips
The time to start upon their trips?
Old Probabilities.

If ever human foresight fails,
And malice fills the carper's sails,
Who feels the chill, unwelcome gales?
Old Probabilities.

With charity for others' fault,
Why should we make unkind assault
If short of truth sometimes should halt
Old Probabilities?

If knowledge comes with lapse of years,
Why spare we not our flippant sneers,
And for the future have no fears
Of Probabilities?

Why took our grandfathers, as it came,
Weather and wind of every name?
Because then quite unknown to fame
Were Probabilities.

E'en now the people of Japan,
Of Zanguebar and Hindostan,
Must lay their plans as best they can
Without Probabilities.

If aught of good is seen to flow
From knowing how the wind shall blow,
Why let not all the wide world know
Old Probabilities.

E'en yet beyond the range of earth,
Where new-born spirits find their birth,
We hope e'er long there'll be no death
Of Probabilities.

Railroad Telegraphy.—Relations of Railroads to Telegraph Companies.—Train Despatching, etc.

THE important and intimate relation of the telegraph to the operation of railroads, renders the action of railroad managers in reference thereto of great interest to the readers of THE TELEGRAPHER, and in fact to all concerned in telegraphy, either as managers of telegraphic interests or as employes. At the quarterly meeting of the Western and Southern Railway Association, held in Cleveland, Ohio, July 7th, 1872, which was attended by leading officials of many of the most important Southern and Western Railways, some very important reports and action were taken on the subject, and the following is the official report of the proceedings as they appear in *The Railway Gazette* of Sept. 7th:

Capt. E. G. Barney, Chairman of the Committee upon "The Relations of Railways to Telegraph Companies," made the following report from that Committee:

Western and Southern Railroad Association.

GENTLEMEN: Your Committee on "The Relations of Railways to Telegraph Companies, and the Rules of Precedence which should Govern their Business," beg leave to report that existing contracts between railway and telegraph companies are too various to be stated in a form fitted to this report.

In most cases known to your Committee, however, the practice of telegraph companies has been to ignore the rights and necessities of railways, giving preference to commercial and other paying messages. So long as railways were worked as isolated lines the telegraph was of less importance, and the wires being less occupied by commercial business, very little injury to railway interests was felt; but an increase of business, in consequence of the establishment of through freight and passenger lines, has at the same time greatly increased the demand for the transmission of commercial messages and the necessity for the use of the wires by railway managers.

The increase in commercial paying messages being

due, in great measure, to the efforts of railway managers to meet the demand of the public, it is claimed that telegraph companies should bear their proportion of the expense incurred by railways, in affording new facilities to the public, by extending to railway managers the same free use of their wires, for through business, which is by most contracts conceded to the local lines for local business. Telegraph companies complain that this will load their wires with free messages to the exclusion of commercial and other paying matter, and to the great detriment of their business.

Your Committee will not attempt to controvert this position, but will state that the growing necessities of railways demand greater facilities than are now generally obtained from telegraph companies, and hence would recommend that early measures be adopted by railway companies to organize such a system of telegraph lines, to be exclusively controlled by the several railways interested, as will not only meet their present but future wants, both local and foreign. To accomplish this end your Committee recommend that a permanent Committee of three be appointed to prepare a plan or plans for the organization of a National Railway Telegraph Company, if after careful investigation it shall become apparent that such a company can best meet the wants of the railway management—or such other railway telegraph companies as sectional necessities may seem to require, should the latter be deemed advisable.

Your Committee believe that such organizations can be made remunerative outside of railway service, and that the companies engaging in the enterprise will find in it a service of revenue equal to any of their investments.

E. G. BARNEY,

Chairman of Committee.

On motion of Mr. Fink the report was adopted, and Messrs. Barney, Talmage and Hammond appointed a Committee, as recommended.

Mr. Talmage, Chairman of the Committee on "The Best System for Despatching Trains by Telegraph," prepared the following report, which he submitted, with the accompanying note, to the President:

To the President of the Western and Southern Railway Association.

SIR: The Committee on "The Adoption of the Best System of Despatching Trains by Telegraph" beg leave to report as follows:

1st. The safest and best plan is to adopt a proper system of signals for train orders.

2d. To compel all conductors to inquire of each operator at telegraph offices if they have any orders for them.

3d. That train despatchers, in sending orders, must call up both offices to which it is necessary to send orders, and send to both offices the same order at the same time; and, in case both offices cannot be raised, the order must not be sent.

4th. That we recommend, in all cases where practicable, a time order should be given—giving one train the right to the road until a certain time, then conceding the right to the other train—in all cases allowing for variation of watches, as at regular meeting points.

5th. Two copies of a train order must, in all cases, be made—one copy for the engineer and one for the conductor. The copy for the engineer to be handed to him before the train leaves the station.

A. A. TALMAGE, Chairman.

Hon. Thos. Allen, President Western and Southern Railway Association.

DEAR SIR: The Chairman of the Committee on "The Best System of Despatching Trains by Telegraph" begs leave to report that the other members are not present at this meeting, and that he has not received from any member his views in regard to this subject, and therefore is unable to submit a report embodying the views of all the members of your Committee. I would respectfully suggest that the Chair name two other members to act on this Committee, and report at the next quarterly meeting.

Very respectfully, etc.,

A. A. TALMAGE, Chairman.

The members present appeared greatly interested in the subject of train despatching, and after considerable discussion Mr. Horace Scott moved that the Secretary be instructed to send circulars to all the Superintendents of railroads in the United States, ask-

ing for copies of their rules and regulations governing the movement of trains by telegraph—the same to be referred to the Committee on Train Despatching. Adopted.

On further motion of Mr. Scott the report was laid over for consideration until next meeting.

Subsequently the President, in accordance with the request of Mr. Talmage, reconstructed the Committee on "The Best Method of Despatching Trains by Telegraph." It now consists of Messrs. Talmage, Gimperling and Anderson.

The following subjects and Committees, to report at the next quarterly meeting, which is to be held at Louisville, Kentucky, were announced by the Executive Committee:

1st. *To Prepare a Plan for the Organization of a National Railway Telegraph Company, if, after a careful examination, it should be deemed necessary.*

—E. G. Barney, Gen. Sup't Selma, Rome and Dalton R. R.; A. A. Talmage, Gen. Sup't Pacific R. R. (of Mo.); Gen. J. H. Hammond, Vice-President Macon and Brunswick R. R.

2d. *On the Best Method of Despatching Trains by Telegraph.*—A. A. Talmage, Gen. Sup't Pacific R. R. (of Mo.); J. E. Gimperling, Gen. Sup't Louisville, Cincinnati and Lexington R. R.; Col. A. Anderson, Vice-President Toledo, Wabash and Western R. R.

An Adventurous Telegrapher and Artist.

THE following account, which is copied from the Washington, D. C., *Sunday Herald*, will be read with interest by the many friends and acquaintances of Mr. A. G. Gustin, who was for some time in the Commercial News Department of the Western Union Telegraph Company in this city, which position he resigned to accompany the Darien Exploring Expedition. Mr. Gustin, besides his accomplishments as a telegrapher, is an artist of considerable ability.

A letter recently received in this city from Mr. A. G. Gustin, now a resident of the United States of Colombia, suggests brief mention of his career as typical of the adventurous American. Mr. Gustin is a telegrapher by profession, and is well known in telegraphic circles in this country. He was at one time manager of the Western Union office at Savannah, Georgia, and in 1870 joined the Darien Exploring Expedition as assistant telegrapher. He left the expedition at Carthagen to seek his fortune in the wilds of Colombia. Possessed of very considerable artistic talent, he turned his attention at first to painting the gorgeous scenery of the Cordilleras, and sold his works at good prices to the Government at Bogota. After a short residence at Bogota he was appointed Superintendent of the Government telegraph—lines, a position he now holds, with headquarters at Cali, from which he writes to his friend, Mr. W. H. Clarke, of this city, under date of June 20. He describes Cali as 'the prettiest town in the finest part of the country,' and says:

"The Government has just made a contract with some Americans, Smith & Modica, for a railroad from here to the port of Buenaventura, and we have been having grand fiestas and rejoicings over the event. The arrival of the telegraph wire at each of the towns in the valley of the Cauca has also been the signal for great rejoicings, illuminations, fireworks and balls. We are also preparing for the *fiesta* of San Juan, which lasts nearly the whole of next week, during which there will be bull-fights, races, quadrilles on horseback on the plaza, whiskey, fights, headaches, and all kinds of diversions."

Of the country and people Mr. Gustin writes:

"This State of Cauca is the best of the whole country. The valley of the River Cauca, which is the best part of the State, is exquisitely beautiful, with a climate that can't be beaten for healthfulness in any part of the world. It is never so hot here as in the States in summer, and the nights are always cool and delightful. In fact, it is the realization of all that has been written of Paradise. The only drawback is the damnable mixture of Spanish and 'nigger' that forms the population—or, as I should say, the great mass of the population—what they express in Spanish by the word 'populacho.' The better class of the people I like extremely, and, what is better still, they seem to like me. The manners of the people in good society here appear to me to be the very perfection of good breeding, uni-

ting a simplicity and frankness that are enchanting with a cordiality that wins the heart in spite of the prejudices of race and education. The country is one of the richest in the world in minerals and agricultural products, but in consequence of the innumerable revolutions that have disfigured its history, the people are to-day very poor. But poverty here is a very different thing from poverty in the States. The habits of the people are so simple, and their wants so few, that with a very small income a man can support in comfort a large family—and while there is a total absence of the extravagance and luxurious refinement that prevail in richer countries, I believe the people are more contented and happier. The present Government of the Republic, like its predecessor, is doing much to extinguish the rancor of party feeling by the moderation of its measures, and is initiating a policy of peace and encouragement to industry, and whatever tends to the improvement of the country and the development of its natural wealth, that bids fair to bring about a better state of affairs. The subject of the education of the masses is receiving a great deal of attention, and the Government is doing all that it can to do away with the ignorance that now renders the lower class the fit instrument for the accomplishment of the plans of demagogues, that swarm here as they do in our own country.

"If the railroad is constructed this part of the country will be opened to the immigration of the people of all parts of the world, and it is certain that a country more inviting cannot be wished for."

The following description of a wonderful waterfall will be read with interest:

"I've got lots of sketches of this country—an album full of them—that I am painting whenever I have a few spare moments. I am going to send some of them to New York one of these days. Oh! I wish you could see a waterfall that I saw near Bogota a few days before I left there. It is one of the wonders of the world—a small stream, about like the Maudingia river in size, falls first about twenty feet upon a flat platform of rock, and thence, in one leap of six hundred feet, falls in a shower of lace, or rockets of foam, into a chasm that appears as if it had been rent open by some terrible earthquake. At the top, which is eight thousand feet above the sea level, the foliage is that of a cold region, but at the bottom, amongst the rainbows that dwell in the mist that rises continually, one sees the beautiful palm and the luxuriant vines and broad leaved plants of the tropics. It is the most exquisitely beautiful scene that I have ever seen. I can't express the delight I felt, as I lay flat on the rocks at the top of the fall, and looked down—down—down that ever varying fall of spray, lighted up as it was in the most wonderfully magical manner by the morning sun. Oh! I would give my life to be able to paint such a scene. I had been in Bogota more than a year before I went to see it, but if ever I go back I shall not fail to visit the Fall of Tequendama again."

Mr. G. writes that he is having a good time, and likes the country so well that he has no desire to return to the States, but says: "If there should be any chance for fun, like a war, for instance, I'd go." One would suppose he could find wars enough in South America. After what has been seen of his acquisitions it is not surprising to learn that he speaks Spanish better than any of the English or Americans about him; and we are sure all will wish this adventurous American every success in his Colombian career, as his old friends do most heartily.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Presents and Presentations.

TO THE EDITOR OF THE TELEGRAPHIC.

A FEW weeks ago your columns contained an article showing up the business of gift making, gift taking and its consequences, also its extent and amount in money value, by estimate, as applied to our fraternity.

Without doubt it was a home thrust to a good many of us. I remember my unspoken sentiments upon giving towards two magnificent gold watches. The getters-up were men who did not stand very firmly upon their own bottom. I knew and felt I was a hypocrite to encourage the practice, pretending to take delight in making my contribution, which I should really have preferred to see go into the fire twice over. In one of the instances there arose a bitter quarrel between two of the leading movers as to the inscription and manner of presentation. The leader was outstripped in his subscription list, and the victor claimed the direction, and finally most of the contributors were drawn into the quarrel, which made enemies of years' standing.

In both instances there came up very disagreeable features, and, so far as I know, this is the case as a rule. The real incentive is thus clearly shown to be a mean one. To him who gives with a right motive it is of no consequence who else gives or how much, and he would really prefer not to know.

The "Journal of the Telegraph," in its issue of Sept. 2d, has come out, on principle, squarely against the presentation practice. I hope all may read the article.

It begins near the bottom of the editorial page, right hand column.

For years we have seen in the same paper numberless descriptions of presentations in the most elaborate form—the names of the givers, the little speeches of the leaders, and so forth, all blazoned out in full and laid before the eyes of the five thousand employees who, with scarce an exception, look upon such acts with a keen sense of humiliation, and regard the publication thereof as the least degree of impudence and self-glorification.

In that one little editorial Mr. Grace has done a great deal for the fraternity, and I hope it will teach the contributors of such items as it heads a lesson which will last as long as memory.

C. L. G.

Correction.

THE communication in THE TELEGRAPHIC of August 31st, under the heading of "Practical Suggestions for an Organization of Telegraphers," signed "F. P. LEUTZ, Operator L. I. R. R.," should have been signed F. F. LEUTZ, Lehigh Valley R. R.

Personals.

Mr. CHARLES M. PRICHARD is again located at Laurencburg, Indiana, in the Western Union and Cincinnati, Indianapolis and Lafayette R. R. office.

Mr. WILLIAM W. PRICHARD has taken charge of the Ironton, Ohio, Western Union office.

Mr. ANTHONY P. PRICHARD, formerly of the Western Union Covington, Kentucky, office, is at the Granville, Ohio, office of the same company.

Mr. B. F. PARKS has resigned his position as agent and operator of Ala. Central R. R. at Marion Junction, Alabama, and accepted a position in the V. and M. R. R. at Meridian, Miss., as operator and clerk.

Mr. DANIEL CREAMER has been transferred from Osborne, Missouri, on the Hannibal and St. Joseph Railroad, to Macon, Mo., on the same road. Mr. CREAMER is an old subscriber to THE TELEGRAPHIC, and manifests a practical appreciation of its merits.

Mr. C. H. MAHONEY has been appointed manager of the Atchison, Kansas, Western Union office. Mr. M. will worthily fill the position.

Mr. R. E. FARMINGTON, who has for some time past been employed at Macon, Missouri, has been appointed train despatcher on one of the Divisions of the Atchison, Topeka and Santa Fe R. R.

Mr. EUGENE POWERS, who was formerly employed on the H. & St. Jo. R. R. at Hannibal, Mo., has been transferred to Laurenc, Kansas. Mr. P. is a skillful operator, and is much missed by his late associates for his good humor and jovial disposition.

Mr. JAMES W. STACKY, who has for the past three years been employed by the Hannibal and St. Joseph R. R. at Hannibal, Mo., has been appointed Superintendent of Telegraph of the Atchison, Topeka and Santa Fe R. R. This is an excellent appointment. The line under his charge is 300 miles in length, and is being extended to a still further point upon the road.

Mrs. L. E. MACKLIN, Manager of the Western Union Telegraph office at Hannibal, Mo., has just returned from a visit to her parents at Mineral Point, Mo. Mrs. M. is one of the first lady operators in Missouri. Her first telegraphic services were on the Government telegraph.

Mr. S. W. HILL is manager of the Pacific and Atlantic office at Hannibal, Mo. Mr. H. is noted for his beautiful Spencerian penmanship.

The Telegraph.

The Western Union Offices and Business on the Pacific Coast.

A FRIEND has kindly permitted us to make the following extracts from a private letter, from a telegrapher in San Francisco, which will be found of interest:

"The Western Union main office at San Francisco is situated at 522 California street, between Montgomery and Kearney streets, in a three story brick building, with a white front. On the first floor, which is used for the receiving and delivery departments, may be found acting as receivers, from 9 A. M. to 5 P. M., Mr. W. H. Gamble, brother of the General Superintendent, and at the next receiving window Mr. James Willis, well known to New York telegraphers.

Adjoining the receiving windows is found the delivery department, of which Mr. Thomas J. Collins has charge as Chief Delivery Clerk, with Mr. John Barry as his assistant.

There are about twenty messengers connected with this department; they are all dressed in gray uniform, with Western Union buttons on cap, jacket and vest, and present a decidedly neat appearance.

Mr. C. F. Dozier acts as relieving receiver and operator at the Stock Board, sending quotations of stock as sold to S. F., who in turn sends on stock printer about the city, and also on the stock wire to Sacramento, Virginia City, Gold Hill, and mining towns further east.

In the rear of the building is the Supply Department; Mr. A. H. Post, supply agent.

Outside of the building in a small shed is the bat-

tery of forty cups (Grove), which furnishes electricity for all the wires, most of which are very long, but cannot be said to work well. The locals all work out of one battery. A wooden frame, about two feet long by one wide, eight inches high, glass sides and ends, holds the mixture, and is cleaned but once a month, and works well. This, with the small main battery used is, I believe, the idea of Mr. Stephen D. Field, the electrician of the company.

On the second floor are the offices of the General Superintendent, Mr. James Gamble, and Mr. George T. Ladd, Assistant General Superintendent of the Pacific Division. In this office, also, is Mr. A. L. Baker, Superintendent's Clerk.

On the same floor, but in the next building, are found the offices of Mr. Frank Jaynes, Cashier; A. P. Dubois, Auditor; J. L. Barbey, Assistant Auditor; H. J. Ladd, Error Clerk and Accountant; William Wilson, W. J. Collins and H. W. Stent, Register Clerks.

In the rear of this floor Col. A. L. Evans, Agent of the Associated Press, has his office; and next door is the office of Col. C. L. Buckley, draughtsman. On the floor above is the operating room, which is about thirty feet long by thirty wide. Three windows, fronting on California street, and a skylight give abundance of light. Mr. J. S. Urquhart is the Manager, with Mr. Charles P. Hoag as Chief Operator; Mr. Charles Thomas as Night Chief Operator, and George Sawyer, Assistant. There are in this room nine operating tables, all but one of which are placed against the wall. These are both short and narrow, and hardly afford room for the use of an ordinary message clip; and as for writing manifold copy, it is almost as awkward as holding it in your hand. Over the relay is a thin strip of walnut on which rests the sounder, the relay, of course, being directly beneath the latter.

The relays and some of the sounders used were made by the Electrical Construction and Maintenance Company, of San Francisco, who turn out excellent work, and build all city and private lines. Messrs. George H. Mumford, of New York, James Gamble, George S. Ladd, S. D. Field and M. Greenwood, of this city, are proprietors, and the success of their undertaking must prove highly profitable to them.

The wires run from the battery into a Jones lock switch set in the wall, and from thence under the floor to the legs of the instrument tables. On the left, on entering the operating room, is the Manager's desk; next to this is a line which runs all around the bay, ending at San Rafael, a village across the Golden Gate, and about 25 miles distant. The next is used as a spare table, and the next to that is a local wire to Reno, at which point Salt Lake and all Utah and Nevada business, except Gold Hill and Virginia, is repeated. Next is a wire running south to San Diego, via Visalia and Los Angeles, with a button repeater at Visalia. This line is about 700 hundred miles in length. The next table, which fronts on the street, between two windows, accommodates a wire running north to Marysville, Yreka and Portland, Oregon, with a button repeater at Yreka. Portland repeats all British Columbia, Vancouver's Island and Oregon business. This wire is about 1,100 miles long, and works middling well, but never really good. This and the "South" wire is in constant trouble from running through a country exposed to wind and falling trees, roving cattle, etc., knocking down poles and breaking wires. Next is a printer with transmitter. The stock wire to Gold Hill and Virginia City is on the next table. These stock messages are, 99 out of 100 of them, in cipher, and are very puzzling to the operators. As a rule they are not very well written to send from, and the cipher words are much alike in appearance and sound but almost reverse in meaning.

Next to this is the overland wire, which, in good weather, works middling well to Chicago. When a line is worked through four sets of repeaters through such a country, much of it a wilderness or desert, it is not to be wondered at that a dragging gait is used. To get through 15 or 20 words a minute for an hour is doing well. Adjoining the "overland" is a small way wire running to San Mateo and San Jose.

In the centre of the room is a table of the same description as the others, but about twice as large, with a partition in the centre. On this is one of Stearn's duplex instruments, which is worked to Sacramento, 175 miles.

The city business of San Francisco is immense, considering the small number of wires. The tariff rates in the division are low, and no one abbreviates or counts the cost in stock or important messages. During the spring stock excitement over 600 city messages were received in one day, from 8 A. M. till 4 P. M. These, with through office and cable messages, make lively work. The Virginia and Gold Hill wire has done 185 received, and about 100 messages sent, to and from Virginia City alone, up to 4 P. M.; Gold Hill about 75 received and about 40 sent. This for one wire, and considering that nearly all were cipher messages, and bad ones at that, is doing well. Sacramento local wire does an average of 350 messages a day, sometimes running up to 450. When the line gets crowded they work double on the duplex, but generally with an operator at each end. Way business is done on this wire, also. The "North" is a steady wire, with a good many way offices on it, and Portland and Vancouver's Island business is heavy and on the increase. Marysville, also, does a good business. The wire South is not so much pressed with business. The wire to San Rafael is kept busy the whole time.

there being so many way offices upon it, and all doing a good business. The other wires are also fully employed.

The overland wire is kept constantly busy with private messages and press reports, making a steady drag if working to Chicago, and affording but little time for loafing if repeating this side of Chicago. The cable messages will average about 850 per month.

The operators employed in the San Francisco office are Messrs. John Yantz, Wm. Foley, T. S. Cunningham, A. Vinton, N. H. Brown, John Campbell, W. E. Smith, Bittenbender, Edward Reese, George Sawyer and Charles Thomas.

The branch Western Union office, at the corner of Front and Sacramento streets, is managed by Miss Susie W. King; the Grand Hotel office by Miss M. George; corner of California and Montgomery streets by Mr. H. C. Ladd with Mr. H. Gilman as assistant.

It would hardly seem necessary to have an office only half a block from the main office, but while a customer was walking half a block he might lose a fortune. In stock operations time is money here.

Among the telegraphers formerly in the service, but who are now independent of it, are Messrs. Wm. Brown, formerly chief operator in the San Francisco office, now said to be worth \$250,000, made in stocks; Howard Coit, caller at the Stock Board, who receives a salary of \$1,000 per month, and perquisites in the shape of grants from the Board of Brokers, and with a good property; John S. Kae, worth about a million and a half, all made in stock operations. On the other hand, within the last few months one man lost \$600,000 in 24 hours by a sudden decline; that was when shares selling for \$700 dropped to \$72.

Liability of Telegraph Companies.

An important legal decision was announced at the last term of the law court in this district, which settles the law in this State as to the liability of telegraph companies to their employers in case of failure to transmit or deliver messages. As the case (George W. True *et al.* against International Telegraph Company) is of novel impression in our courts, and of interest to the public, we give a brief statement of the facts: In 1870 George W. True & Co., of this city, sent a despatch to their correspondents in Baltimore, accepting an offer of a cargo of corn at a given price and freight. The offer had been made by telegraph the same day, and the reply was sent on a "night blank" of the International Telegraph line at the usual night rates. The despatch, on account of the carelessness of some operator on the line west of Boston, was not duly forwarded, and True and Co. failed to secure the cargo of corn. As the market price of corn and freights advanced immediately, they were obliged to buy other corn to meet the wants of their business, at a price largely in advance of that offered. A claim was immediately preferred against the telegraph company for the damage, resulting from their failure to promptly transmit the message to its destination, which was resisted by the company on the ground that one of the conditions printed on their "night blanks," subject to which the message was sent, was that the telegraph company should not be liable, in case of failure to deliver the message, to an amount greater than the sum paid for its transmission—in this case, forty-eight cents. Suit was therefore brought to recover special damages; the case was argued July, 1870, and has been under consideration two years. The court has now rendered a decision in which the claim of the plaintiffs is sustained in full.

The ground of the decision was that although telegraph companies may establish reasonable rules for the conduct of their business, they cannot, by printed notices on their blanks, relieve themselves from the liability which the law imposes on them for motives of public policy: that the courts are to determine in the last resort whether the rules and limitations prescribed by the company are reasonable, and that the condition set up in defence in this case was not binding upon the plaintiffs, as it attempted to relieve the telegraph company from all liability (beyond the amount paid for the message), whether arising from carelessness, accident or wilful default of the company and its servants. The measure of damage was declared to be the difference between the price of the cargo offered and of that bought to supply its place, with the additional freight. *Portland (Me.) Press.*

Annual Meeting of the Gold and Stock Telegraph Company.

The annual meeting of the Gold and Stock Telegraph Company was held at the office of the company, No. 61 Broadway, in this city, on Tuesday last, Sept. 10, and the following gentlemen were elected Directors for the ensuing year: Tracy R. Edson, William Orton, Horace F. Clark, Joseph M. Cook, Marshall Lefferts, James H. Banker, Alonzo B. Cornell. At a subsequent meeting of the Directors Marshall Lefferts was elected President; Joseph M. Cook Vice-President, and Norman C. Miller Secretary and Treasurer.

An Act has been printed and passed at the close of the last session (35 and 36 Vic., Cap. 83) to extend the provisions of the Pensions Commutation Act, 1871, to officers and clerks of telegraph companies who are entitled to annuities. The statute is to apply to the officers of companies whose undertakings have been purchased by the Postmaster-General.

The St. Pierre and Duxbury Section of the French Cable Repaired.

THE section of the French Atlantic Submarine Cable between Duxbury, Mass., and the Island of St. Pierre, which has been interrupted for some months past, has been repaired, and is now in operation again. The whole of the joint system of Atlantic telegraph cables connecting Europe with the United States is now in perfect working order.

Now and Then.

In 1840, thirty-two years ago, the State election in Maine was one of great excitement. The contest for Governor was between John Fairfield, Democrat, and Edward Kent, Whig, and the latter was chosen. It was twelve days before the result was known—a contrast to the present rapid mode of obtaining and circulating news—for within about 12 hours of the closing of the polls on Monday the Boston *Journal* was circulating in Maine with the full report of the result, while in less than six hours after the polls closed we published the result in Boston.—*Boston Journal.*

Creditable Telegraphic Labor.

Miss AVERY, the telegraph operator at Stonington, on the day of the terrible disaster to the *Metis*, remained in the office seventeen consecutive hours, and sent during that time 4,000 words to the press, besides 483 paid messages of various lengths, a very large proportion of which she had to receive from Watch Hill and repeat to other points. A gentleman of Boston, a total stranger to her, was so much struck with her faithful devotion to her work, that he sent her quite a sum of money as an expression of his appreciation.

A New Telegraph Instrument, Machinery and Model Manufactory.

IN our advertising columns will be found the advertisement of Mr. Wm. UNGER, who has fitted up a shop over the New Haven Railroad depot, Franklin street, in this city, for the manufacture of telegraph instruments, light machinery, models, etc. The extensive and rapidly increasing demand for all descriptions of telegraph machinery is taxing the productive capacities of manufactories of telegraph apparatus to an unprecedented extent, and this new establishment will prove a valuable addition to existing facilities.

Mr. UNGER is a reliable and excellent mechanic, and is fully deserving of the liberal patronage which his enterprise will undoubtedly receive. He has excellent facilities for the manufacture of light machinery and models, as well as telegraphic apparatus, and will pay particular personal attention to this branch of the business. He has recently dissolved his connection with the extensive manufactory lately under his management at Newark, N. J., under the firm of EDISON & UNGER, and will hereafter devote his entire attention to his new enterprise.

Another Sensible Telegrapher.

AMONG those who favored us with a visit last week was that staunch friend of THE TELEGRAPHER, Mr. H. F. MERRIMAN, of Middletown, N. Y. As will be seen in our marriage announcements, Mr. MERRIMAN has wearied of single blessedness, and having found a young lady who was willing to fight it out in his company, not merely all the fall but for life, has very sensibly united his future with hers, and they were on a brief wedding tour, preliminary to settling down to everyday life and labors. We congratulate them both on the happy result of their mutual attraction, and hope that the circuit of their happiness may never be interrupted or crossed.

Never use a hard word where an easy one will answer as well.

New Patents.

For the week ending August 6, and bearing that date.

No. 130,259.—PRINTING TELEGRAPH. Martin F. Wessmann, Brooklyn, N. Y.

1. The printing magnet operated through a local or separate circuit, by a circuit closer held open by the clinging of an armature to a magnet in the main circuit during the breaking and closing of the said main circuit in moving the type wheel, but closed and brought into action by the cessation of that movement on the open main circuit after the type wheel is brought into position, substantially as herein specified.

2. The circuit breaking and closing armature B, in combination with the type wheel or other magnet A in the main circuit, and with a vibrating lever, C, or its equivalent, for breaking and closing the printing circuit, substantially as herein specified.

3. The combination and arrangement of the magnet A, armature B, vibrating lever C, and circuit closing contact plate D, substantially as and for the purpose herein specified.

4. In combination with the foregoing the retarding fly E or its equivalent, for the purpose specified.

No. 130,260.—PRINTING TELEGRAPH.—Martin F. Wessmann, Brooklyn, N. Y.

A device by which, with a single wire for the main line and a single battery, the printing is effected automatically by a simple prolonged cessation of the step and step movement for turning the type wheel on a broken circuit.

1. A printing telegraph instrument constructed so as to effect the printing automatically, by the cessation of the step by step movement of the type wheel, and the commencement thereof for the next letter or character, substantially as herein specified.

2. The combination of the additional armature E and the circuit plates G, arranged and operating together, in connection with other parts of the instrument, substantially as and for the purposes herein specified.

3. The combination of the unison stop with the armature E, substantially as described, so as to release it by the said armature, substantially as specified.

4. The cord t and pulley u, for forming connection between the armature E and the unison device, substantially as herein set forth.

Married.

MERRIMAN—NORTHUP.—At Otisville, N. Y., at the residence of the bride's parents, Wednesday, Sept. 4th, by Rev. C. A. Harvey, Mr. H. F. MERRIMAN, of Middletown, N. Y., to Miss AUGUSTA NORTHUP, of Otisville.

HUMSTONE—WILLARD.—At Pittsfield, Mass., Sept. 11th, at the residence of the bride's parents, Mr. WALTER C. HUMSTONE, Supt. of the Atlantic and Pacific Telegraph Company, New York, to Miss MARY WILLARD, of Pittsfield.

Died.

HORNER.—In this city, on the 10th inst., after a lingering illness, JOHN HORNER, Cashier of the Western Union Telegraph Company, in the 52d year of his age.

STACEY.—At Hannibal, Mo., August 28th, Little Nell, only daughter of James and Nellie Stacey.

Autumn, with her magic brush,
Spreads o'er each leaf a vivid blush,
Which fadeeth slowly day by day,
As it yieldeth to decay.
Gently as the moon's soft shadow
Broke the darkness of the night,
So he gently bore her upward
Through a realm of cloudless light.

Obituary.

JOHN HORNER.

One by one those whose names have been associated with the telegraphic interest from its earlier days are passing away. As these meet the inevitable fate of all living, and are gathered to their final resting places, we can do no more or less than to embalm their memories in the columns of THE TELEGRAPHER. It saddens us to have this duty to perform so frequently for former associates and friends, with whom we were connected in telegraphic labors in the times when the telegraph was just struggling into a recognition of the importance and usefulness which it has since established.

JOHN HORNER, the genial and popular *attaché* of the telegraph in this city for twenty-six years past, whose countenance and hearty greeting was so much a matter of course to telegraph patrons and employees in this city alike, as to be missed in no ordinary degree, has gone from us and we shall see him no more. His cheery and pleasant salutation will never again be heard as we enter the precincts of the office where, for so many years, his ever ready welcome and pleasant smile has greeted the thousands who came and went from day to day.

Mr. HORNER first entered the telegraph service about the year 1845 as a clerk of the old Magneto Line, at Philadelphia. Here he remained about a year, and upon the opening of the House line between New York and Philadelphia, in 1846, he came to New York as the receiver and cashier of the New York office. At that time positions were more nominal and duties less defined than they have since become, and employees were expected and willing, no matter whatever their nominal positions, to do anything that might be necessary to facilitate the business. Consequently, the young cashier was not unfrequently called upon to repair lines, turn the wheel for the House printers, and discharge others of the multifarious duties connected with telegraphy. This he was always prompt and ready to do. The companies were poor, and for some the business was unremunerative, and it required considerable financial ability to manage the finances, or to supplement the not infrequent lack of finances which hampered and rendered difficult telegraphic administration. Always loyally devoted to the interests of the companies which he represented, Mr. HORNER very skillfully tided over the financial shoals which beset the telegraph in those early days. Possessed as he was of financial ability of a superior order, and with an unswerving faith in the final success of the telegraph, he thoroughly identified himself with telegraphic interest and soon became almost indispensable to it. When the building No. 21 Wall street was leased by the House Telegraph Companies Mr. HORNER became the Receiver and Cashier of the New York State as well as of the Southern Company, whose lines had been extended to Washington. He remained in this position until the consolidation known as the American Telegraph Company was finally organized, and the main office was ultimately moved to 145 Broadway. In the meantime the telegraph business had continued to grow and increase until the few dollars of receipts per day had expanded into hundreds and thousands. When the consolidation of the Western Union Telegraph Company was effected, Mr. HORNER became the Cashier of the consolidated company, which position he held till his death.

By judicious investments and speculations, mainly in telegraph stocks, he had several years ago acquired a handsome competence; but, as he has often said himself, the business had become a second nature to him, and he was happier at his desk than he could be in a life of ease and relaxation, and so he continued to pursue his regular routine of duties until disease compelled him to relinquish it for a time. About a year since he was prostrated by an abscess, which laid him up for several months. He was granted six months leave of absence from the company, and for many weeks was unable to even rise from his bed. He finally partially recovered, and was again at his post for a few hours in the day, but never entirely regained his health and strength. A few weeks since, finding himself unfit for active duty, he went to Long Branch, in hope to find renewed life and vigor in its breezes. This failing, he went to the Movement Cure at Watertown, N. Y., for treatment, but it was all in vain, and about a week since he returned to his residence at the Gilsey House, in this city, where he died on Tuesday last. The immediate cause of death was pneumonia. He leaves a widow but no children to mourn his loss.

JOHN HORNER had his faults, as indeed who of us has not, but his genial manners and cordiality made him many friends. He was the right man in the right place, and although he has not borne a conspicuous part in the advancement of the telegraph to its present preeminent position, yet his services were none the less important and valuable. He was one of those who grew up with the telegraph, and in bidding him a final farewell we do so with sincere sorrow and regret, in which we know thousands here and throughout the country will participate. May he rest in peace—his errors and faults forgotten—his virtues and services remembered and cherished, until to us shall come the final summons for which, in his decease, we have another warning to prepare.

THE TELEGRAPHIC

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, SEPTEMBER 14, 1872.

Premiums and Commissions.

We have decided to make a slight change in the terms of subscription for THE TELEGRAPHIC. For the future the "Club terms" are done away with. But few subscriptions are now made in this way, and the club system is more trouble and annoyance to us, our agents and subscribers, than it amounts to. Single subscriptions will remain as before, at \$2 per year, payable in advance.

We shall not at present offer any long premium list, but will make the following premium propositions: For four subscriptions to THE TELEGRAPHIC, at the regular subscription price for one year, we will send a copy of the paper free to the person sending us the subscriptions.

For ten new subscribers we will give, as a premium, PICKETT's Memorial Bust of Prof. S. F. B. MORSE. This bust is what is termed cabinet size, and is finished after the style of the celebrated ROGER'S groups, and is a superior work of art.

To those who may interest themselves in procuring subscriptions we will allow, in lieu of the above, for new subscribers, 20 per cent. upon the amount collected, which may be retained in cash, or we will send any books or instruments that may be desired, for the amount of commission as a premium.

We trust that these propositions will meet with approval, and that the friends of the telegraphers' organ will at once use their best exertions to secure a handsome addition to our subscription list.

Back Numbers of The Telegrapher Wanted.

OUR supply of copies of THE TELEGRAPHIC, numbers 289, for January 27th, and 313, for July 13th, of the current year and volume, is entirely exhausted, there having been of late an unusual demand for files of back numbers of the paper. We would be under very great obligations to our friends, who do not desire to preserve their numbers for binding, if they would look up and forward to us any copies of these numbers that they have to spare. We will pay twenty-five cents each for a few copies, either in cash or subscription to THE TELEGRAPHIC, if desired.

The Important Relation of the Telegraph to Railroads.

THE important relation of the telegraph to the operation of the railroads of the country is constantly becoming more apparent to the railroad managers.

The proceedings of the quarterly meeting of the managers of Western and Southern railroads, held at Cleveland, Ohio, July 7th, which we print on the first page of the current issue of THE TELEGRAPHIC, shows that the subject is occupying the attention of those concerned in railroad management. As will be seen, a committee was appointed at that meeting to consider the subject of a national railroad telegraph system, and to report upon it at the next meeting, to be held at Louisville, Kentucky, in October.

The policy adopted by the Pennsylvania Railroad Company, of owning, controlling and operating its own telegraph lines, is unquestionably the true one for all important roads. Only in this way can the business of the roads be safely and properly conducted.

It is of the utmost importance, especially for single track roads—and this is the character of most of our Southern and Western roads—that the telegraph lines shall be operated primarily for the safety and benefit of their own property. On roads where trains are run by telegraph through the class of operators designated as train despatchers—and all roads should run their trains in this way—it is essential that the wires should be at all times under the direction and control of these officers. The system very generally in vogue has been to operate the telegraph lines in conjunction with some telegraph company, and use them not only for railroad purposes but also for private business. The consequence is that the operators, being under a dual con-

trol, the efficiency of the lines for railroad purposes is greatly impaired, and frequently the railroad business is subordinated to the more immediate requirement of the wires for private business, or the earning of compensation for the telegraph companies which, in whole or in part, own them.

The time is fast approaching when railroads will be required, as a part of their necessary equipment, to establish and maintain an efficient telegraph system for the safety of their patrons, even more than for the facility afforded for working the roads systematically and effectively. No road can be regarded as safe without this system, however excellent may be the management in other respects. The managers of railroads should be, and eventually will be compelled to adopt every appliance which shall increase the safety and security of the passengers and traffic passing over their roads. The free and constant use of the telegraph is one of the most certain and reliable of these appliances, and this fact is beginning to be recognized by intelligent railroad managers all over the country.

The railroad telegraphs of the country have already assumed a great importance. Where they are hampered and restricted by contracts, and arrangements with telegraph companies, these must give way to the public interest and welfare. The movement to which we have referred is an important step in the right direction, and we hope to see it followed up energetically and persistently until a satisfactory result has been reached.

The railroad telegraph operators of the country already form an important part of the telegraphic fraternity. Recognizing this fact, we have for some time past devoted much attention to their interests and to the improvement of their condition and prospects. This branch of the service should command, in the more important positions, the best telegraphic talent of the country. Heretofore, as a general rule, railroad telegraph operators have been insufficiently compensated, and a lower grade of talent and experience has been considered good enough for railroad service. While there are many excellent telegraphers employed on railroad telegraph lines, yet it must be conceded that, as a body, they are not the best that could be procured. Railroad telegraph situations are too generally regarded as an intermediate stage, to be filled temporarily while a professional education is being obtained, and to be abandoned as soon as a certain degree of experience and efficiency is attained. This is wrong, and is an evil which railroad managers should seek to correct, and that with as little delay as possible. The important interests constantly and necessarily intrusted to the ability and faithfulness of railroad telegraph operators should insure the employment of the best attainable talent, and the compensation should be sufficient to secure this. It is time that the slighting remark, "Oh! he is only a railroad operator," should no longer have its present signification. On the contrary, to say that a person is a railroad operator should imply that he is properly qualified for almost any responsible telegraphic position requiring experience and professional ability.

It is neither wise nor economical for railroad companies to employ telegraph operators merely because their services can be obtained at a low rate of compensation. The best in any business is in the end the cheapest, and this fact, in connection with railroad telegraphs, must eventually become apparent to even the most economical of railroad managers.

An Excellent Appointment.

Mr. O. C. GREENE has been appointed Superintendent of Telegraph for the Northern Pacific Railroad, with his office and headquarters at Brainerd, Minnesota. The appointment covers all the Northern Pacific lines as far as constructed, together with leased lines, and the line from Moorehead to Fort Garry. The main line is now in operation to the Missouri river, and is being extended as the road advances.

Mr. GREENE was formerly Superintendent of the Telegraph Department and Train Despatcher of the St. Paul and Pacific Railroad, which position he resigned some three or four months ago on account of ill health. A two months' vacation and travel, however, restored his health, and he has now received the important appointment above stated. It is a most excellent one, and the Northern Pacific R. R. Co. is to be congratulated upon having secured his valuable services.

The Prosperity of the Telegraphic Interest.

WE receive most encouraging accounts of the continued prosperity of the several telegraph companies which divide the telegraph business of the country. They are all doing an excellent business, and some of them are largely increasing their facilities. We recently published an extract from a communication of President ORTON, of the Western Union Telegraph Company, to the editor of the *New York Tribune*, in reply to certain statements made in that paper in regard to a temporary decline in the market value of the stock of the company, in which he says:

"The managers of this company have never had so many and so substantial reasons for being satisfied with the condition of its affairs and with the prospects for the future as at the present time. Its revenues, gross and net, are larger than ever before, and the evidences are abundant that the increase of both in the immediate future will be greater than during any corresponding period in the past."

And this we believe is true, also, of its competitors generally. The country is prosperous, and notwithstanding the pending Presidential election, which usually has an unfavorable effect upon general business, the Fall trade promises to be very active and prosperous. This, of course, insures to the telegraph a large amount of patronage, for every day the telegraph is used more and more in the transaction of business. Telegraphic facilities have a reciprocal influence upon trade and commerce, rendering it possible to do a largely increased business upon a given amount of capital and within a given time. The Atlantic cables are also doing an excellent and remunerative business, and the use of cable facilities is constantly on the increase, both for business and social purposes.

The State and Presidential elections are also furnishing an unusual amount of employment to the telegraph and adding very much to its receipts, and the best of that class of business is that a large proportion of it is done at night, and when there is less pressure upon the wires than during the busier hours of the day. There seems to be practically no limit to the amount of telegraph business to be done except the facilities for doing it; and these are being constantly increased.

The increase of telegraph lines, offices and business, of course, creates an increased demand for telegraphic labor, and, consequently, properly qualified operators have no difficulty in finding employment.

The future of the telegraph is hopeful and bright, and, as Mr. ORTON says, the evidences are abundant that the increase of business and revenues in the immediate future will be greater than in any corresponding period in the past.

Stearns's Duplex Instruments on the Newfoundland Lines.

WE learn from Mr. HENRY H. WARD, Superintendent of the New York and Newfoundland Telegraph Company, who has just returned from a trip with Mr. JOSEPH B. STEARNS, to introduce the duplex instruments on the lines of the company connecting with the Atlantic cables, that the instruments have proved a great success. The lines from Heart's Content to Plaister Cove, via Placentia, St. Pierre and Sydney, 554 miles in length—of which 332 miles are cable, in two sections, of 124 and 208 miles—work perfectly through the duplex, largely increasing the capacity of the lines for business.

Mr. STEARNS is yet at Sydney, completing and perfecting the arrangements, but will return home in a few days.

The lines in Northern regions have heretofore been very much troubled and interrupted by aurora, which in those regions is much more frequent than in lower latitudes. During their experiments they found that, by disconnecting the wires from the earth and establishing a complete metallic circuit, all the effects of the auroral current were obviated, and the wires could be worked as perfectly as when there was no aurora visible. For lines in northern latitudes this is an important fact, and even where auroras are comparatively infrequent the demonstration will suggest a method by which the delays heretofore incident to auroral displays may be obviated.

The seven hundred gas jets of McVicker's Theatre, in Chicago, are lighted simultaneously by electricity.

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MANUFACTURER OF
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MODELS, &c.
NEW HAVEN R. R. DEPOT,
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THE ROAD-MASTER'S ASSISTANT
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SECTION-MASTER'S GUIDE.
An attractive and entertaining little book, by an old Road-master.
All who are in any way interested in Railroad business should read it.
Sent, post paid, for \$1. Twelve copies for \$10.
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MAGNETO-DIAL TELEGRAPH
in the world.
It has already been extensively adopted, and has invariably given entire satisfaction.
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ELECTRIC AND CONTROLLED CLOCKS
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OF
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The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).
All telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.
Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

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This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.
A large stock always on hand and for sale at the lowest market prices—both free and in bond.

TELEGRAPH LINES
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WITH A CENTRAL OFFICE,
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ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

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Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System
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It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

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that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

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Messrs. GAMEWELL & CO. are the owners of the original **FARMER & CHANNING PATENTS**, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves no little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

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has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

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is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION of CANADA,

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but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

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These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

JONES' LOCK SWITCH-BOARD,

a most compact and reliable Switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

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We have made special arrangements to furnish this article for office purposes at a reduced rate.

ALSO, TO FURNISH

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of the usual size, with KERITE COVER, believing that it will exceed, in insulation for submarine purposes, ANYTHING HITHERTO MANUFACTURED.

We shall be happy to furnish estimates for any amount and size of cable, which will be found to compete with any other construction, both in quality and price.

We manufacture the Genuine ELECTROPOION BATTERY, with Patent Platina Connection, introduced by us eight years since; also, THE ALPHABETICAL OR DIAL TELEGRAPH, now extensively used in this and other cities for private lines, being easily and quickly learned by any one.

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Relative TENSILE STRENGTH, homogeneity and elasticity—decreasing the liability to breakage from cold weather, sleet, etc.;

CONDUCTIVITY—insuring great improvement in the working of lines in any condition of the weather;

And in its DURABILITY, which greatly exceeds that of the best galvanized iron wire;

Altogether resulting in a very great reduction in the cost of maintaining and working telegraph lines, while, at the same time, insuring

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These Instruments will work in any circuit, and their performance is guaranteed.

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CAUTION.—Parties desiring to purchase Improved Fire Alarm Telegraph Apparatus are respectfully requested to beware of representations made by any one who professes to show our system, while really exhibiting and vending another.

An egregious case of humbug of this sort has recently come to our knowledge, and the party thereto will be prosecuted.

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A NEW REPEATER, and a

MAGNETO-DIAL INSTRUMENT,

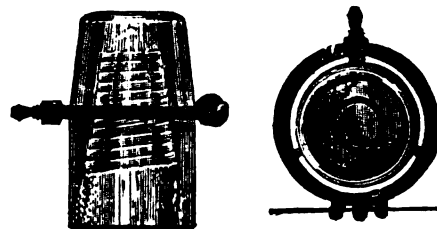
By Mr. HICKS.

Address,

4 LEADER BUILDING, SUPERIOR ST.,

Cleveland, Ohio.

CHESTER'S PATENT INSULATOR.



The undersigned solicits examination of some of the reasons which have induced him to recommend to his patrons and friends the Insulator exhibited above as the best and cheapest in use.

Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or larger fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal.

As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

TELEGRAPH WIRE.

The attention of

Telegraph Companies, Superintendents and Line Builders is called to a

New Article of TELEGRAPH LINE WIRE

OF UNEQUALLED QUALITY AND UNIFORM EXCELLENCE.

While great care and attention has been given to Instruments and Insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European Governments, only fit for fencing purposes. Many tons of such material now remain here, utterly unsaleable and unfit for use.

The researches of the able electricians of Europe have resulted in establishing a standard of excellence for Telegraph Wire far exceeding that with which we have heretofore been satisfied.

We extract from the minute and specific details a few of the requirements of a

STANDARD GOVERNMENT WIRE.

1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable, and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be coiled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications a breaking strain of 1,260 pounds or No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

We now offer for sale this Uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market, to which this system of tests is uniformly applied.

We shall designate it by the Trade Mark,

CHESTER, A 1,

and our customers ordering it may be sure of receiving an article always uniform, and always the very best.

The capacity or endurance of No. 9 is 21 to 23 twists upon itself in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

COMPARATIVE AND COMPETITIVE TESTS

with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 29. The omission of the elongating process would increase the flexibility and the tenacity.

Although the wire has been proved IMMENSELY SUPERIOR to that commonly sold, its price will closely approximate to that of the inferior article.

CHARLES T. CHESTER,

104 Centre Street,

NEW YORK.

L. G. TILLOTSON & CO.,
8 DEY STREET, NEW YORK,
AND
BLISS, TILLOTSON & CO.,
41 Third Avenue, Chicago, Ill.,
GENERAL AGENTS FOR THE SALE OF
SUBMARINE TELEGRAPH CABLES
AND
INSULATED WIRES,
of various kinds, insulated with PURE GUTTA PERCHA,
COTTON and SILK. Manufactured by

SAMUEL C. BISHOP,
at the Manufacturers' prices. Sole Agency in the United States
for the celebrated

GALVANIZED WIRES
Manufactured by Messrs. RICHARD JOHNSON &
NEPHEW, Manchester, England.
Long Lengths; Superior Quality; Low Prices.

SOLE AGENTS FOR THE
American Compound Telegraph Wire Co.,
OF NEW YORK.

The superior quality of this Wire consists in its LIGHTNESS,
STRENGTH, CONDUCTIVITY and DURABILITY; in all of which re-
spects it greatly exceeds Galvanized Wire.

SOLE AGENTS FOR
BROOKS' IMPROVED
PATENT PARAFFINE INSULATORS.

A Stock of these Insulators always on hand.

MANUFACTURERS OF THE
Patent Screw Insulator and Brackets.
MANUFACTURERS OF

JONES' PATENT LOCK SWITCH,
For any number of Wires required.

PATENT RELAY MAGNETS,
Of any resistance required.

PONY SOUNDERS, MAIN LINE SOUNDERS,
POCKET RELAYS, in Hard Rubber Cases,
PREMIUM REGISTERS, KEYS of all Styles,
LIGHTNING ARRESTERS, PLUG SWITCHES,
BATTERY MATERIAL, for Grove, Carbon, Daniell,
Hill, Yeoman, Smee, and every other description
of Battery in use. In short, the

LARGEST AND BEST VARIETY OF
TELEGRAPH MATERIAL
Ever exhibited in this country.

We can at any time furnish and ship Equipment
for an entire Line of 300 to 400 Miles, within
Twelve Hours after receipt of Order.

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109 COURT STREET, BOSTON, MASS.
MANUFACTURER OF
TELEGRAPH INSTRUMENTS
OF ALL KINDS,
GALVANIC BATTERIES,
JONES' PATENT LOCK SWITCH,
PATENT ELECTRIC GONGS,
PRINTING TELEGRAPH INSTRUMENTS.
ALSO, ON HAND AND FOR SALE,
D. W. PUTT & CO.'S Mechanical Telegraph
Instruments,
"Pope's Modern Practice of the Electric Telegraph,"
AND A FULL ASSORTMENT OF
TELEGRAPH MATERIALS AND SUPPLIES,
AT THE LOWEST PRICES.

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CHICAGO, ILL.,
DEALERS IN TELEGRAPH POLES.
Keep constantly on hand and for sale a full assortment of all
lengths and sizes of TELEGRAPH POLES, and are prepared at all
times to fill orders and make contracts for supplying Poles on
the shortest notice.
Yard cor. HALSTEAD and TWENTY-SECOND STREETS.
Office address,
234 SOUTH WATER STREET.

JOSEPH MOORE & SONS,
(Established 1820.)
MANUFACTURERS OF
INSULATED WIRES
Covered with Silk, Cotton, Linen, &c., for Magnetic and Tele-
graphic Instruments, &c.
OFFICE WIRES,
Single and Double, Covered, Braided and Prepared in any
manner desired, Colored, &c.
LINE WIRES,
Switch Cord, Conducting Cord, Pole Cord, &c., in any style, size
or color, made of copper, silver, tinsel, &c.
Nos. 535 & 537 CHINA STREET,
Below GREEN STREET,
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G. C. WESSMAN & SON,
MANUFACTURERS OF
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PRINTING AND DIAL TELEGRAPHS,
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TUBES DRAWN FOR AIR PUMPS, CAMERAS AND TELESCOPES,
BRASS FINISHING AND MODEL MAKING,
205 and 207 Centre Street,
Between Howard and Grand Sts., New York.

SCREW GLASS INSULATORS
AND SCREW BRACKETS.
Having made arrangements with the Manufacturers for the
exclusive sale of the above insulator in this city, made under the
CAUVER patent, we are prepared to furnish them, with or with-
out Brackets, in any desired quantities.

L. G. TILLOTSON & CO.,
Sole Agents for BROOKS' PATENT PARAFFIN INSULATOR.
" " AMERICAN COMPOUND TEL. WIRE CO.
" " JOHNSON'S CELEBRATED ENGLISH WIRE.
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PUBLISHERS OF

SMITH'S MANUAL.
MANUFACTURERS OF ALL KINDS OF
INSTRUMENTS AND BATTERY MATERIAL
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ESTABLISHED 1842. ESTABLISHED 1842.
COVERED WIRES,
Made from Lake Superior Copper, warranted strictly
pure, covered with Hemp, Flax, Linen, Cotton, Silk or other
material, for Telegraph Instruments, Electro-Magnetic Machines,
Philosophical Apparatus, and all kinds of Electrical Purposes.
Also, PLAIN, WOVEN, ENAMELLED, SHELLACED,
PARAFFINED, and all kinds of
TELEGRAPH OFFICE WIRES.
Also, Telegraph Switch Cords,
many Patterns, Plain, Woven and Braided. Parties being partial
to any particular kind need only enclose a small specimen in
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CONDUCTING CORDS, POLE CORDS, TINSEL.
C. THOMPSON,
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29 North 20th St., Phila., Pa.

A SUPERIOR PRINTING TELEGRAPH
INSTRUMENT,
FOR PRIVATE AND SHORT LINES.
The undersigned is now prepared to supply the improved and
superior
PRINTING TELEGRAPH INSTRUMENTS
manufactured under the patent of Mr. J. E. SELDEN. This
instrument has already been extensively introduced, and has
given complete satisfaction to all who have adopted and used it.
It is SIMPLE, RELIABLE, and not liable to get out of order; can be
operated by any person of ordinary intelligence after a few
minutes' instruction and practice.

PRIVATE LINES.
constructed in the best and most substantial manner, and on
reasonable terms.
Favorable arrangements will be made with line constructors,
telegraph employes, &c., for the introduction of the Printer.
For further particulars, terms, &c., apply to

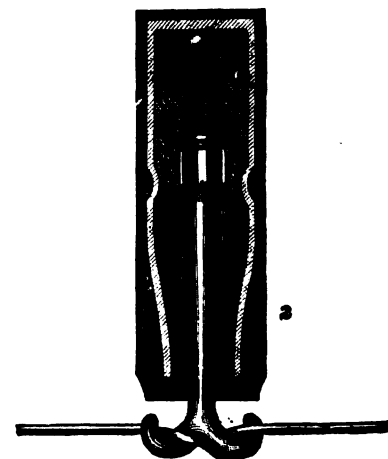
MERCHANTS MANUFACTURING AND
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S. J. BURRELL, Superintendent.
No. 50 BROAD STREET (Rooms 12, 13 & 14).
P. O. BOX 6865.

A HAND-BOOK OF PRACTICAL TELE-
GRAPHY.
By R. S. CULLEY.
ENGINEER TO THE
ELECTRIC AND INTERNATIONAL
TELEGRAPH COMPANY.
Published with the sanction of the Chairman and Directors of
the Electric and International Telegraph Company, and adopted
by the Department of Telegraphs for India.
FOURTH EDITION,
REVISED AND ENLARGED.
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D. VAN NOSTRAND, Publisher,
23 MURRAY STREET.

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AND
APPARATUS.
The undersigned have on hand, and for sale on favorable
terms, the following Telegraph Instruments and Apparatus:
BRADLEY'S BOX RELAYS,
MAGNETO-DIAL ALPHABETICAL TELEGRAPH
INSTRUMENTS,
made by E. HOWARD & CO. and ANDERS & CO. for Private
Lines. They require no battery, are always ready for use, and
can be operated by any person with a few minutes' instruction.
SIGNAL BELL TELEGRAPHS.
A new combination, with Key on same base with the Bell, or
otherwise, as may be required.
COMBINATION RELAY AND KEY,
on an elegant Rosewood Base.
For additional information, prices, &c., address
F. L. POPE & CO.,
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WESTERN ELECTRIC
MANUFACTURING COMPANY
MANUFACTURERS OF
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AND
TELEGRAPH SUPPLIES.
220 East Kinzie St., Chicago, Ill.

PARAFFIN INSULATOR WORKS,
22 SOUTH 21st STREET, PHILADELPHIA.
DAVID BROOKS, Proprietor.



AGENCY
FOR THE SALE OF THE SUBMARINE CABLES.
Cables for River Crossings, Insulated Wires, Telegraph Wires,
Iron Posts, Resistance Coils, Universal Galvanometer, Differ-
ential Galvanometer, Conical Multiplier, Reflecting Galvan-
ometer, Sine Multiplier, and all the varieties of Electro-Metric
Apparatus manufactured by
SIEMENS BROTHERS.

The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 57.

New York, Saturday, September 21, 1872.

Whole No. 323

[From the Journal of the Society of Telegraph Engineers.]

West's India Rubber Cable.

It may be in the recollection of many that a four-wire cable, insulated with pure india rubber, was laid many years ago, to form communication between Hurst Castle and Lymington. It will doubtless surprise a good many that this cable of crude manufacture—actually now twenty years old—is still working.

A specimen was forwarded to me a short time since, and I made a careful examination of it, but as the time is so long since its manufacture, a few details as to its history will not be inappropriate.

Charles West, who was well known for his fidelity to india rubber as an insulator, had this cable manufactured in the year—in the early part of the year—1852. Its total length was only $2\frac{3}{4}$ miles, and it consisted of four wires; each wire was of solid copper—No. 16 gauge—untinned and unprepared, insulated with three lappings of pure india rubber, of a narrow width. These four insulated wires were laid up helically together round a small core of yarn, and were lapped with one stout piece of well tarred yarn. This sewing was laid round in one length; the sheathing consisted of a number of iron wires *plaited* like window sash line.

During the summer and autumn of 1852 this cable remained coiled up in a yard, exposed to every vicissitude of the weather, the alternations of wet and dry, sunshine and shade. It was eventually submerged or buried in the early part of 1853, between Keyhaven, on the Hampshire coast, and Hurst Castle, covered by the sea from half flood to half ebb. The mud in this portion of the route is always moist, and but little change is effected in it by the ebbing of the water. The piece referred to was cut out in January of the present year, and was examined and tested a few days afterwards.

The appearance of the cable may be described as follows: The iron sheathing was oxidised, but still offering a strong protection; on removing the sheathing, the yarn was found to be perfect, with a large quantity of tar remaining in it. The strength and general quality of the yarn was remarkable. The insulated wires had been considerably indented by the yarn, and by the lateral pressure of one against the other, they were discoloured externally by the tar, but to all appearances remaining sound, this being evidently so where they abutted against each other, seemingly in perfect preservation, and of a color unchanged.

The insulation of the short lengths at first appeared good, for, on being placed in water, about one division was all that could be obtained on a sensitive Thomson galvanometer, with 100 cells. On working this deflection out, the dielectric resistance came out about two millions per mile. However, on testing the different pieces for retention of charge, an electrometer being used, it was found their insulation was inferior, not one of the wires being able to hold its charge for any lengthened period.

This result was not surprising, for with such a manufacture, be it remembered, so long ago, the insulation necessary, and the means of measuring it, were very different to what they are at the present time. Although, according to our present acquirements, the insulation of these wires must necessarily be considered as imperfect, yet there remains nothing whatever to show that the insulating material has deteriorated.

Wires insulated in such a manner, strip being sewed over strip, cannot have been expected to give perfect insulation, it being almost impossible, without some curing process (at that time unknown) to make the several coatings homogeneous. It is almost certain that at the time referred to, with the largest amount of battery power obtainable, and the most delicate "detector," the insulation of the wires was found perfect.

On cutting the wires and further examining them, there was found a fair adhesion between the several lappings, and the material of each lapping had preserved not only its color but also its elasticity. The stripping of the final lapping of rubber showed the copper wire perfectly *clean*, and with a bloom on it as if it had just been manufactured.

It has been usually considered that bare copper wire next india rubber exercises a deleterious effect. The present case would show the contrary, and proves that the tinning copper wire, where pure rubber alone is used, is unnecessary.

There are many points in connection with the dura-

bility of this india rubber insulated wire that are of great interest, and offer many opportunities for more lengthened remarks, that perhaps might bring about too long a discussion. I have therefore thought it the most desirable plan to give the history of the cable itself, and the results of my actual observations on it, leaving my readers to form their own conclusions. The remarks I have offered are in the interests of telegraphy, and may, I hope, tend in some way to promote further observations on the durability of insulating material for underground and submarine purpose.

G. E. FREECE.

The Australian Telegraph.

AT Adelaide the first telegraphic message from London, dated the 22d June, arrived on the first of July, having been nine days on the road, for some portion of which it travelled on horseback. Still, in whatever way it came, the fact that it arrived is quite sufficient matter for congratulation, although it told little, if anything, more than had been already learnt by the English mail which had arrived two days previously. The account, however, of the progress of the line itself was ample and satisfactory. But little more than 100 miles of wire remain to be hung, between latitudes 18 deg. and 16 deg., and four large and well equipped parties are at work from different points, reducing this gap as speedily as possible. The requisite amount of wire is ready on the spot, a plentiful supply of stores and building materials for the stations lies at the Roper—from which point to the scene of operations there is an excellent road—though it is doubtful whether these can be carted to their several destinations before the commencement of the wet season, while the painful experience of the last forbids any risk to be run in that direction. Each overseer as he finishes his allotted task has directions to return and sink wells along the route, to ensure a safe retreat for the whole party—a work which the late immoderate rainfall will much tend to lighten. A weekly estafette is promised, for the performance of which four intermediate relay camps have been formed. "By the end of September," says the Postmaster-General (from Daly Waters, in lat. 17 40), "all the working parties will be withdrawn, except such as are retained to complete the stations, but some time before that date the wire will be up." There arrived simultaneously with this message the news that the Telegraph Company, tired, it is presumed, of so long a delay, had entered into another contract with Queensland to lay a fresh cable between Port Darwin and the Norman River in the Gulf of Carpentaria. The first message, however, came to an untimely end before half its tale was told, owing to an interruption in the cable somewhere between Java and Port Darwin; and though there is, it is believed, a steamer lying in those waters ready for all contingencies, the fault has not as yet been made good. No blame can attach to the colony for this interruption, as by the original contract the company were bound not merely to land their cable, but to maintain it in good working order for twelve months. Still the delay is none the less vexatious, for all the messages which have been entrusted to South Australia by her sister colonies are still upon her hands. Setting aside the natural dislike that all communities as well as individuals have to the idea that they have been "thrown over," this new arrangement with Queensland need not be regarded in the light of any serious misfortune. It was in the nature of things that at some time or another a rival should appear, either by land or sea; and that the rival would hail from Queensland there could be no two opinions. That it should have appeared so early may be a matter of regret to the South Australians, but it must not be forgotten that by so doing it releases this Government from a considerable debt—the payment of 5 per cent. on the company's capital. Meanwhile the line, as far as it is completed, is in excellent working order. That portion between Port Augusta and Tennant's Creek, lying between latitudes 33 and 20 deg., a length of 1,400 miles, is less subject to atmospheric influence than any other line of telegraph in the colony.

The new rate for postal money orders now in operation is five cents for an amount not exceeding ten dollars.

Miscellaneous.

MAGNETISM.—The French Academy of Sciences has received a paper from M. J. Janin, in which he shows that magnetism may be condensed, just like electricity. Having, for some special purpose, had a large horseshoe magnet made, consisting of ten laminae of perfectly homogeneous steel, each weighing ten kilogrammes, he suspended it to a hook attached to a strong beam, and having wound copper wire around each of the legs, which were turned downwards, he put the latter into communication with a battery of fifty Bunsen's elements, by which means the horseshoe might be magnetized either positively or negatively, at pleasure. The variations were indicated by a small horizontal needle, situated in the plane of the poles. There was, further, a series of iron plates, which could be separately applied to each of the laminae. Before attaching any of the latter the electric current was driven through the apparatus for a few minutes and then interrupted, whereby the magnet acquired its first degree of saturation, marked by a certain deviation of the needle. One of the iron plates (usually called "contacts") was then put on, and it supported a weight of 140 kilogrammes. A second trial was now made, and, the current having passed through again for a few seconds, it was found that the horseshoe would support 300 kilogrammes instead of 140. The number of contacts being now increased to five, which together, in the natural state, supported 120 kilogrammes, it was found, after the passage of the current, that they could support the enormous weight of 680 kilogrammes, which they did for the space of a full week. No sooner, however, were the contacts taken off than the horseshoe returned to its usual permanent strength of 140 kilogrammes. This leads to show that magnetism may be condensed like electricity for a short period.

WHEATSTONE'S PATENT MAGNETIC COUNTER.—This instrument has been devised for the purpose of counting and registering the periodical motions of any machine, whether rotary or oscillating. It may be applied either near or at any distance from the machine whose motions are to be registered. It is less cumbersome than mechanical registers, and cannot be tampered with by persons in charge of the machine.

No Voltaic battery is employed, the electric currents being produced by a small piece of iron attached to the moving part of the machine, working before the poles of a magnet; it therefore requires no more attention than an ordinary piece of mechanism.

Among the purposes to which this register has been applied are the following:

To count the number of impressions produced by any printing machine.

To count the number of revolutions of a screw or paddle shaft of a steamship.

To count the number of visitors who enter a theatre or any public place.

By means of these instruments, also, the rate of working of any number of machines may be seen and compared by the overseer in any distant apartment, without the necessity of visiting the machines themselves.

TO RENDER METALS ELECTRIC.—T. Sidot has observed this phenomenon, and found that iron, silver and aluminium, if the friction be sufficient, will give off electric sparks. To perform this experiment take a perfectly dry tube of thick white glass, and put in fifteen to twenty grammes granulated silver, and thirty to forty grammes pure bisulphide of carbon, and seal up the tube. On warming the tube slightly and shaking it in the dark sparks appear in the interior, their number increasing with the violence of the agitation. The sparks disappear on immersing the tube in water.

An enterprising fellow in Chicago has invented a process by which real genuine thunder and lightning can be produced by means of an electric battery. The new theory in theatrical thunder is soon to be tried, and the effect produced is said to be startling.

A stroke of lightning accomplished the destruction of 1,700 gallons of whiskey in an Indiana town, a few days ago, but an eye-witness says it was a pretty even tussle between the two.

Love and Electricity.

BY R. J. C.

This maiden fair with golden hair
Did cruelly deceive me;
She oft would laugh by telegraph,
And swear she ne'er would leave me.

When on the wire 'twas her desire
To do naught else but tease me;
I was so fond of my dear blonde
No other girl could please me.

I'd hold my "biz." till she had "riz."
The office that she wanted;
By her fair face, in every place,
My mind was always haunted.

How oft I'd fret fighting circuit
For her, the darling creature;
My ill I'd cure with her picture,
In gazing on each feature.

But "such is life." Fate's cruel knife
Has cut our love asunder;
Last Monday night we had a fight—
She told me "Go to thunder!"

I scorn to cry, but still my eye
Will sometimes twitch and quiver,
When she flicks out, "You're up the spout;
You'd best go up Salt River!"

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Telegraph Matters at the National Capitol.

WASHINGTON, D. C., Sept. 17.

TO THE EDITOR OF THE TELEGRAPHIC.

It is some time since a communication from Washington has appeared in THE TELEGRAPHIC, and although but little of interest, telegraphically, is transpiring here just now, I will try to remove any impression that may have been made on the minds of your readers that we are entirely defunct. In a few weeks the National Capitol will again become a point of interest to telegraphers, as well as to the rest of the great American people. Very soon now our Government officials will be again found at their posts, and the work of preparation for the reassembling of Congress will be in active progress.

It is rather early yet to predict what the postal telegraph advocates will do, or attempt to do, at the next session. That they intend to make a strong effort to obtain some favorable legislation there is no doubt. The Postmaster-General will renew his recommendations, and urge the matter with as much earnestness and vigor as possible. Mr. R. B. Lines, whose connection with the subject as the private secretary of Gen. Washburne, at the time he undertook to engineer the postal telegraph through Congress, will be remembered, has been made private secretary to the Postmaster-General, and is engaged in collecting and collating facts and arguments in favor of the scheme, for the annual report. Mr. Hubbard will be on hand, as usual, to urge his hybrid scheme, and it is possible that there may be a lively contest over the matter during the session; and then again it may all die away, and the subject go over by general consent to the next Congress.

There is considerable dissatisfaction at the Signal Bureau at the manner in which the weather reports are manipulated at this time. The service is very imperfectly performed, and the reliability of "Probabilities" considerably impaired from a frequent lack of the proper data for calculating them.

The Signal Bureau has for the past two or three months been experimenting with an electrical automatic water gauge, for registering at a remote station the rise and fall of rivers. The instrument is the invention of Mr. Gilliland, a Cincinnati telegrapher, and has proved to be a success, and will, no doubt, be adopted and used by the Bureau, when it adds to its present service the reporting of the height of water in the more important rivers, which it is intended to do, particularly in the West.

The Western Union Company have been put to a great deal of trouble by the operations of the Board of Public Works, necessitating the constant moving of poles, etc., in the city. A large gang of men have been kept busy at this work all summer. That Company's southern wires have heretofore crossed the Potomac river at Georgetown by the Aqueduct Bridge, for the use of which the Company were compelled to pay a rental of some three or four hundred dollars per year. The Baltimore and Potomac Railroad has completed the rebuilding of the old Long Bridge, and the Western Union Company have arranged to run their wires over this bridge hereafter, crossing under the two draws by submarine cables, thus avoiding the use of the Aqueduct Bridge.

The Baltimore and Potomac road have got their one wire line, with Brooks' insulators, in operation between Baltimore and Washington, and as far down the Virginia road as Quantico.

The Baltimore and Ohio Railroad Company are also constructing a substantial one wire line along their metropolitan branch, extending from Washington to Point of Rocks, and will perhaps continue it to Pitts-

burg. This line is also insulated with Brooks' insulators. Glass insulation seems to be decidedly out of favor with our railroad telegraph friends, as it ought to be for any telegraph line.

I noticed our old metropolitan friend, Mr. J. C. Hinchman, Supt. of the Western Union Metropolitan District, in the city a few days since. He is seeking to patent an improvement in the hand stamps, now so extensively used by the receivers of the Western Union Company, which will prove a great labor saver, and I hope valuable to the inventor. The distinguished and venerable appearance of Mr. Hinchman made quite an impression here.

We are expecting an unusually lively winter here, but as yet very little has been done towards preparing for it, as it is too early in the season. Willard's Hotel and the old Kirkwood will be reopened. The Ebbitt House has been enlarged, and we will try to find comfortable quarters for all who may favor our city with a visit.

The Franklin and the Southern and Atlantic Companies are working together here, and appear to be doing very well. I notice that Col. H. J. Rogers, the engineer in charge of the Southern and Atlantic is making Washington his headquarters at present, and it is understood will do so for some time to come, this being the best point from which to manage the affairs of the company. The colonel is familiar to the old telegraphers here as an efficient and experienced telegraph manager.

WASHINGTON.

An Organization which shall Include all Telegraphic Interests.

TO THE EDITOR OF THE TELEGRAPHIC.

I WILL again, if you please, take up a small portion of the space in THE TELEGRAPHIC allotted to correspondents, and endeavor to present a few reasons why I think an organization of telegraphers would be of interest to the profession, to managers of telegraph lines and to corporations. I wish I could do this in a clear and convincing manner, or that I could wield the pen of an adept, and thereby enlist the sympathy and co-operation of all, superintendents, managers and operators, in this matter. But this is a talent which Providence has seen fit to withhold from me. I know there are others who are able to arouse the hearts of the fraternity, and it is to them I would make an especial appeal. Take up your pens, look into this matter, sift it, and then give us your opinion either one way or the other. Although I am "only a railroad operator," I feel a great interest in the telegraphic profession, and am anxious to see it rank among the noblest on the face of the globe. This can be done if we choose so to have it, and if each one takes pride and an interest in matters tending to its advancement as an art and profession. But I am wandering from my subject. We should have an organization to protect the operator. We see all around us men and boys entering the ranks of operators who are no more fit than a freshly imported cannibal. This evil is nowhere more strongly exemplified than on railroad lines. I do not mean by this that they are alone inefficient as manipulators, but that in all appertaining to the art and science they are perfect ignoramuses; and some even pretend to be operators who are barely able to write their names or spell them correctly: yet such men are daily being taken into offices to "learn to telegraph," and after being there four or five weeks are turned out as operators. There are certain institutions in existence which do the very same thing. No operator or superintendent will deny that it would be a blessing to the profession and the corporations to have this stopped. The question arises—How can this be done? I answer—Let superintendents, managers and operators link themselves together into an association, pass resolutions covering the matter, and you have the remedy. If those who have the employing of operators entrusted to them can be brought into a close companionship with the operators, they can be convinced that it is to their interest, as well as to the interest of the companies which they represent, not to hire men of this character; consequently, if these men cannot obtain situations as operators they will be of necessity obliged to leave the business, and find employment more suited to their abilities. This is one great evil in the profession that can be remedied by an organization. I could present many more of almost as evil a nature, but think it unnecessary, as they are known to all.

An organization would be of benefit to superintendents, in assisting them in procuring men competent to fill the positions in their charge, and would oftentimes save them the unpleasant duty of discharging poor operators. A man may make application to a superintendent for work, who, upon first appearance, may seem to be a respectable and trustworthy operator, but after he has worked for a short time the superintendent finds him to be a worthless sot, but is obliged to tolerate him until he can get a man suitable for the position, and this is sometimes for quite a long time, during which time, through the neglect of this operator, serious loss may occur to the company; and then who is to blame, or, rather, who has to bear the blame? The superintendent, of course.

Give us an organization consisting of honest, sober and industrious men; issue to each of these a certificate of membership; then if an operator bearing one of these applies to a superintendent for a situation, the superintendent sees in this man the person he wants; for he comes well recommended by an association consisting of the best telegraph men of the country, who

have given him a trial. Superintendents, would this not be of great benefit to you? An organization of telegraphers would be of benefit to corporations in many respects. At the meetings of each division matters of business could be discussed, different opinions given, and then a summary made to ascertain which would be the best way of conducting that business to the interest of the several corporations which the members may represent. An organization would have the effect of uniting operators more closely to each other, to the superintendent and to the manager; it would remove a great deal of jealousy which now exists, and cause them to be anxious for the advancement of each other.

Let us have an organization that will be of benefit to ourselves and our employers. But enough from me.

In my two communications I have endeavored to give the views of one operator. If it has been in a dry and rough manner, I hope the editor and readers of THE TELEGRAPHIC will excuse me for infringing on their space and time, and that in turn all will give us their views on this matter of a telegraphers' association. I should especially like to hear from some other Lehigh Valley railroad operator or our Superintendent.

F. P. LENTZ.

A Fair Sample of Telegraphic Professors and of their Pupils.

LEAVENSWORTH, KANSAS, September 11th.

TO THE EDITOR OF THE TELEGRAPHIC.

YOUR editorial in THE TELEGRAPHIC of the 7th inst., regarding telegraph colleges, professors, etc., reminds me of an incident in my earlier telegraphing which will perhaps best show the average of telegraph "professors."

During my younger days in telegraphing, a line repairer stationed at my office, and who had just about learned to make the alphabet, was called East, where, I believe, he assumed similar duties.

About six months afterwards, taking up a newspaper, my attention was at once attracted to a big, puffy article on a commercial college, whose session was about closing, and whose students had gathered together to testify their appreciation of their teachers, among whom I beheld the name of my former repairer, "Professor" —, of the Telegraphic Department, as the recipient of a valuable present from his confiding but unsophisticated pupils, for his abilities in turning them out first-class operators in three months (the way, I believe, the advertisement read).

I believe, however, the "Professor" came to grief afterwards for inducing the impecunious proprietor of the establishment to purchase a couple of barrels of blue stone to run a couple of local batteries for six months, the length of time estimated for.

Now, a sample of the student, and I will close. A few weeks ago I was attracted to an instrument in my office by what seemed to be a labored effort at making my call. Answering it I had this conundrum finally ground out to me: "Do you want an operator at your office? Write slow." HALF RATE.

Personals.

Mr. JAMES D. REID arrived home from Europe on Sunday evening last, in the steamer Baltic, from Liverpool. He expresses himself as very much pleased with his trip, and returns greatly improved in health.

Mr. J. W. CROUSE has resigned his position with the Northwestern Telegraph Co. at St. Paul, Minn., and has accepted a position at the East.

Mr. J. E. CARDWELL, of Philadelphia, has resigned his position with the Northwestern Telegraph Co. at St. Paul, Minn., and accepted a position at the East.

Mr. GAVIN F. WALKER, Manager Pacific and Atlantic telegraph office at Quincy, Ill., is off on leave of absence, and is rusticated about the lakes of Minnesota.

Mr. WILL GRIDLEY and Mr. J. T. CONANT have been appointed to the situations vacant through the resignation of Messrs. CROUSE and CARDWELL in the Northwestern Telegraph office at St. Paul, Minn.

Mr. H. G. BUCKINGHAM has resigned the position of manager of the Fort Scott, Kansas, Western Union office, and goes to St. Joseph, Missouri.

An Important Case.

THE Southwestern Railroad Company and the Western Union Telegraph Company vs. the Southern and Atlantic Telegraph Company. This is a bill filed in the Superior Court of this county by the complainants, to enjoin the defendants from constructing and operating a telegraph line over the right of way of the Southwestern Railroad Company from Macon to Columbus. The complainants claim that the Western Union Telegraph Company have the exclusive right to construct and operate telegraph lines over this right of way. The same claim is made by the Western Union Telegraph Company as to the right of way of many other railroads in the State, under exclusive contracts with these roads. This is, therefore, a test case, and one of great magnitude and importance, involving many difficult questions of law. It was elaborately argued yesterday morning before Judge Cole by Judge Lyon, representing complainants, and by A. O. Bacon, Esq., representing defendants. Judge Cole has reserved his decision until Saturday morning. —Macon (Georgia) Telegraph.

The Telegraph.

The Australian Postal Telegraph.

We have received, through the kindness of a subscriber to THE TELEGRAPH in Australia, a copy of *The Argus*, published at Melbourne, of May 27th, which contains an abstract of the report of the Deputy Postmaster-General of Victoria submitted to Parliament, on the affairs of the Post-office and telegraphs of the colony for the year 1871.

The gross receipts on account of the electric telegraph business for the year amounted to £36,941, or £3,796 in excess of the receipts during the previous year. The result of the reduction in the rates on telegraph messages on 1st January, 1870, has been a very considerable increase in the number of messages transmitted. In 1869, before the uniform 1s. rate was introduced, the number of Victorian messages was 256,723, and the gross cash receipts thereon were £24,154 6s. 9d.; in 1871, the number of such messages was 496,043, and the gross cash receipts were £27,274 14s. 2d. The lowering of the rates on intercolonial messages has been followed by an increase in numbers. The average number for seven months before the reduction was 2,150 per month; the average number during 1871, after the reduction, was 3,446 per month. Under the head of "Buildings," the report states: Arrangements are in progress for transferring the Central Telegraph Office from William street to a temporary building now in course of erection on the vacant portion of land in Elizabeth street, the site of the future extension of the permanent building. These arrangements, it is expected, will be completed about the end of May. It is proposed to open a receiving house at the Custom House, where telegrams may be deposited for transmission by messenger, at regular intervals, to the central office for despatch by wire to destination. The erection of the temporary buildings referred to has, by restricting the area available for outbuildings and yard accommodation, shown the necessity for securing some land immediately adjoining the Post-office reserve, in order to provide for the inevitable requirements of the department in future years. Under "Telegraph Lines," it is reported that there were three extensions during the year, as follows: Wood's Point to Gaffney's Creek, Camperdown to Terang, Sandhurst to Eaglehawk. Sixty-two miles of additional wires were erected, and 102 have been or will be completed in 1872. The question (remarks the Deputy Postmaster-General) of placing the whole of the lines of the colony on open circuit has been under consideration, and it is highly desirable steps should be taken in this direction without delay.

Foreign Telegraphic Notes.

THE directors of the India Rubber, Gutta Percha and Telegraph Works Company have announced an *ad interim* dividend at the rate of 5 per cent.

The receipt of the Great Northern Telegraph Company's European lines amounted for the month of August to 131,606fr. (£5,264), and for August, 1871, to 106,612fr. (£4,264), showing an increase of £1,000. The traffic receipts on the China and Japan lines for the month of July amounted to 97,485fr. (£3,899), against 61,245fr. (£2,450), in July, 1871, showing an increase of 36,240fr. (£1,449). In consequence of interruptions on the Siberian land lines the traffic returns for the month of August had not yet arrived from China and Japan.

Advices from Buenos Ayres announce the inauguration, on the 29th of July, of the Transandinian Telegraph connecting the River Plate with the Pacific, the works of which were commenced in November, 1870. Senor Sarmiento, the President of the Argentine Republic, declared a national holiday on the occasion, and the ceremony was attended by the foreign ministers and consuls and all the principal persons in Buenos Ayres, including Mr. Wheelwright, who was the first introducer of the telegraph system into Chili. As the Brazilian line with Montevideo is nearly finished, Valparaiso and Buenos Ayres will soon be within fourteen days' communication with Europe, and next year, when the cable shall have been laid between Brazil and Europe, the chain through South America will be complete and instantaneous.

The total number of messages forwarded from Postal telegraph stations in the United Kingdom, during the week ending August 31, 1872, was 320,920, an increase over the corresponding week of last year of 64,811.

The *South Australian Register* states that by the middle of June the Superintendent of Telegraphs calculates that not less than 150 miles would remain unconstructed. A despatch has been received from Tennant's Creek announcing the arrival of Mr. Lewis and party with their horses on the 24th May. The remainder of the express party were expected to reach Mr. Patterson at Daly Waters on the 7th June. The Telegraph Department at Adelaide is now communicating with Tennant's Creek Station, a distance of 1,400 miles, as easily as with Melbourne.

The proposal made in the Assembly Cape Parliament, South Africa, to place the sum of £75,000 for the extension of telegraphic communication to the Diamond Fields, has been carried.

The *Eastern Star* (published at Grahamstown, South Africa), of July 9th, has the following: At a special meeting of the Chamber of Commerce, held at Port

Elizabeth on Wednesday last, the Committee highly approved of the idea of bringing this colony into telegraphic communication with Europe and the East by marine cable, *via* Mauritius, and engaged to support any practicable scheme which might be suggested, having in view the landing of the cable in that part. The Committee were of opinion that the terminus of the cable, should be fixed in Port Elizabeth, because this is the most centrally situated part in the colony, and is also the chief emporium of trade in South Africa.

An Experienced Telegraph Repairer and a Non-plussed Telegraph Manager.

DURING the high water season of last spring, the telegraph lines along the Mississippi river were washed out in many places, and, as usual, much difficulty was experienced in maintaining telegraphic communication. The unusual demand for the services of line repairers created a scarcity of the gentlemen occupying that subordinate but most essential telegraphic position, and in the emergency persons not particularly well posted in electrical science or practical telegraphy were necessarily pressed into the service for the time, and the blunders they made, and the queer notions they entertained as to the characteristics of electricity, conductors, etc., gave rise to blunders, some of which if annoying were at the same time amusing.

At one of the offices on the lines in question a young lady was in charge. She received orders to start a man north to find and repair a break. She accordingly started out the first man she could find whose services were available. Within four or five hours he returned, and with much satisfaction reported to the young lady that he had found the break, repaired it and put the line in good shape for business. Notwithstanding, no circuit north could be obtained, and it was evident that something more was requisite before electric continuity could be restored.

Fortunately, while the impromptu line repairer was out, the regular experienced line repairer had arrived at the office, and he was accordingly started north to make further investigation and repairs. Proceeding about three miles he came to a creek where the lines crossed, found the poles washed out on both banks, and the wires laying in the water. After the repairer had got the lines up in good shape, he enquired of some men in the vicinity who were cutting timber, if they had seen any one previously fixing the wires. They replied, "Yes, saw a man there for nearly two hours in a skiff, trying to connect the wires." He had evidently succeeded in his connection, but not in his insulation.

Upon the return of repairer No. 2, and his report of the situation, the operator sent for repairer No. 1, to call him to account. Upon making his appearance, she said to him, "I thought you told me you had fixed the line in good shape?" "Well," he replied, "So I did! I put the wires together so that they never could get apart at that place again unless they were out." "But you did not take the lines out of the water!" "Oh!" he replied, "what difference does that make; sure the whole Atlantic cable is in the water!"

That was too much for the young lady, and she subsided. The amateur repairer had the best of the argument decidedly!

Humors of the Telegraph.

PUNCTUATION is a wonderful thing. A man telegraphed to Burlington for a school, "Shall I come, or is the place filled?" The answer properly was, "No! Place filled on the 17th." The telegraph operator received it, "No place filled on the 17th." He went for it, and was minus travelling expenses.

The *Grand Rapids Democrat* contributes the following to telegraphic literature:

A mechanic employed in the carriage-shop of Arthur Wood, 32 Waterloo street, telegraphed to a friend a few days since as follows: "Come right away; good job;" which, under the skilful manipulation of the operator, read when delivered, "Come right way; good God." The receiver of the dispatch, fearing that his friend had met with some terrible accident, hastened to this city as soon as possible, in no enviable state of mind, and was very agreeably disappointed on learning the mistake.

Severe Accident to a Telegraph Repairer.

MR. JAMES F. KENNEDY, repairer of the St Paul and Sioux City R. R. telegraph line, met with a serious accident recently, near Mankato, Minnesota. While stepping off the pilot of the engine, his heel caught in one of the slats and he fell on the track in front of the locomotive, which ran over one of his legs, badly crushing it. Amputation of the leg below the knee was necessary to save his life.

An Electric Railway Brake.

SUCCESSFUL experiments have been recently made at the Bow Station of the North London (England) Railway of a new railway brake worked by electricity. The invention consists in the application of electro-magnets, exerting a force of 600 pounds to pulleys on a swing shaft underneath the carriages. By merely pressing a key, the guard is enabled to bring the train to a standstill.

New Patents.

For the week ending August 6, and bearing that date.

No. 130,261.—PRINTING TELEGRAPH INSTRUMENT. Martin F. Weisman, Brooklyn, N. Y.

Printing local automatically brought in on either closed or open circuit. Printing lever leaves circuit open or closed.

1. The side or additional armature E, with its arm or lever G vibrating simultaneously with the type wheel armature B, in combination with the vibratory local circuit closing levers H I, substantially as and for the purposes herein specified.

2. The vibratory lever H, arranged and operating substantially as described in the local printing circuit, in combination with the side armature lever G, for printing automatically with closed circuits, substantially as herein specified.

3. The vibratory lever I, arranged and operating substantially as described, in combination with the side armature lever G for printing automatically with open circuits, substantially as herein specified.

4. The retarding gears f f f and g g g, in combination with the circuit closing levers H I, as specified.

5. The combination of the lever I, pawl and ratchet wheel r, notched or cog wheel G, detent q, spring point o, and finger e, operating substantially as described, for effecting the printing and then leaving the local printing circuit open, substantially as herein specified.

6. A printing telegraph instrument, constructed so that with one line wire and a local printing circuit it prints automatically and leaves the local circuit either open or closed, substantially as herein specified.

No. 130,261.—ELECTRICAL WATER AND PRESSURE INDICATOR FOR STEAM BOILERS. John D. Coughlin, New York.

Adjustable circuit closers attached to pressure and to water gauge.

1. The electrical rods K and O, the plate or disk L, the contact plate M, and the float H, all as arranged and described, in combination with the gauge C, the electrical battery, and the alarm bell or gong, substantially as and for the purposes herein set forth.

2. I claim, in combination with the hand and dial of a pressure gauge, the circuit closing device, substantially as described.

3. I claim, in combination with one electrical circuit and alarm bell, the low water indicator and the pressure indicator, substantially as set forth.

For the week ending August 13, 1872, and bearing that date.

No. 130,363.—GALVANIC BATTERY. Frederick E. Beardslee, Brooklyn, N. Y.

The combination in the formation of galvanic batteries, of the metal chromium as the negative element therein, with any suitable substance as the positive element therein, substantially as and for the purpose described.

No. 130,385.—ELECTRO-MOTOR FOR SEWING MACHINES. Abel T. McClure, San Francisco, Cal., assignor to himself, Thomas E. Shannon, George McDonald, George Stevens, Henry E. McBride and Samuel D. Wood, same place.

Two sets of electro-magnets, with beveled poles at right angles to cores, attract and repel armatures, whose motion is communicated through gearing and pitmen to operative parts of a sewing machine.

1. The two sets of electro-magnets C C and C' C', arranged in sets of two pairs each, and having their armatures g g' connected with the shaft d at opposite ends by means of pitmen f and h and h', and crank wheels e and f, substantially as described.

2. The adjustable wheel K provided with the face pulley s, in combination with the prolonged shaft, for the purpose of allowing a change of motor, as described.

3. The electro-magnets C C' and C' C', in combination with the shaft d with its toothed wheel f, shaft J and its toothed wheel L, or the equivalents of these two wheels, connecting bar S and slide e, all constructed and arranged as and for the purpose set forth.

No. 130,426.—COMBINED TELEGRAPH SOUNDER AND RELAY. Chas. H. Haakins, Milwaukee, Wis.

The relative force of the two circuits upon the armature may be governed by simply moving the slide to one side or the other until the apparatus gives a satisfactory operation, while the vibration or extent of motion of the armature remains unchanged.

1. The employment, in connection with the core of a main circuit electro-magnet, of a constant local circuit of less power upon the core than the main circuit, which constantly magnetizes the armature and core of said magnet, substantially as specified.

2. The combination of the main circuit magnet armature with a device for bringing it nearer to one or other of the poles of the magnet without changing the extent of the vibration of said armature.

3. The combination in a telegraph sounder or register of two armatures borne upon opposite ends or sides of a pivoted lever, with two electro-magnets of unequal resistance or number of convolutions, operated by the same circuit, and a device for shunting the circuit from the stronger magnet.

4. The combination upon a single core of two helices of unequal power, connected in separate circuits, in such a manner that they polarize said core in opposite directions.

5. The combination of the main circuit X and helices B, local circuit Y and helices C D, the cores A A', armature E, the magnets F F', armatures G G', borne upon a pivoted lever, the local circuit Z and shunt z, substantially as specified.

Married.

CASSIDY—GRAY.—At Barry, Illinois, September 18th, in the Baptist Church, by the Rev. S. F. Holt, JAMES P. CASSIDY, of the Superintendent's office of the Western Union Telegraph Co. at St. Louis, Mo., to Miss JOSEPHINE GRAY, of Barry, Illinois.

The happy bridal party proceeded on a wedding tour to St. Paul, Minn., accompanied by the best wishes of their numerous friends and acquaintances for a bright and happy future.

MORRIS—BATES.—At Stillwater, Minnesota, September 4th, at the residence of the bride's mother, by Rev. W. J. Johnson, Mr. L. LEE MORRIS, agent and operator of the St. P. and T. F. Railway, to Miss WALLIE J. BATES, of Stillwater.

Mr. Morris is an "old timer," and has had heretofore a lonesome time in his solitary wanderings, and has at last wisely concluded that it is not well to be alone, and has taken one of the fairest daughters of Stillwater to share his future lot. They have the best wishes of their many friends for their future prosperity.

DE FRESH—GENSEMER.—At Orwigsburg, Penna., at the residence of the bride's parents, Thursday, September 12th, Mr. JOSEPH DE FRESH, operator Lehigh Valley R. R., Weatherly, Penna., to Miss KATIE GENSEMER, of Orwigsburg, Penna.

All the operators on the Mahanoy and Hazleton Division of the Lehigh Valley R. R. Co.'s wire unite in wishing Mr. De Fresh and his lovely bride a long and happy life.

During a recent thunder storm the lightning struck and destroyed eight barns in North Castle, N. Y., and five in New Canaan, Conn.

THE TELEGRAPHY

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, SEPTEMBER 21, 1872.

Premiums and Commissions.

WE have decided to make a slight change in the terms of subscription for THE TELEGRAPHY. For the future the "Club terms" are done away with. But few subscriptions are now made in this way, and the club system is more trouble and annoyance to us, our agents and subscribers, than it amounts to. Single subscriptions will remain as before, at \$2 per year, payable in advance.

We shall not at present offer any long premium list, but will make the following premium propositions: For four subscriptions to THE TELEGRAPHY, at the regular subscription price for one year, we will send a copy of the paper free to the person sending us the subscriptions.

For ten new subscribers we will give, as a premium, PICKETT'S Memorial Bust of Prof. S. F. B. MORSE. This bust is what is termed cabinet size, and is finished after the style of the celebrated ROGER'S groups, and is a superior work of art.

To those who may interest themselves in procuring subscriptions we will allow, in lieu of the above, for new subscribers, 20 per cent. upon the amount collected, which may be retained in cash, or we will send any books or instruments that may be desired for the amount of commission as a premium.

We trust that these propositions will meet with approval, and that the friends of the telegraphers' organ will at once use their best exertions to secure a handsome addition to our subscription list.

The True Policy of Telegraph Managers and Employees.

THE relations of capital and labor in telegraphy as in other departments of business are the subject of much misapprehensions on both sides. That the real interests of both capital and labor are, or at least should be, identical there can be no doubt. How this fact shall be made apparent and the greatest good of all concerned be realized is a problem that deserves and should receive the most dispassionate and earnest consideration.

It is too much the case that employers and employees alike regard their interests as to a certain extent antagonistic and inimical. On the one hand there is too frequently manifested a disposition to obtain the greatest amount of service for the least possible compensation, while on the other there is a desire to secure the most compensation for the smallest amount of service. This is perhaps natural, as society is at present constituted, but it is in the highest degree impolitic. Every employer should feel an interest in the prosperity and welfare of the employé, and on the other hand the employés should feel that the prosperity of the employer is essential to his own advancement.

The true policy of both parties is unquestionably to coöperate for the mutual benefit of both. The employer should be willing that the employé should share to a reasonable extent in the prosperity which can only attend the united efforts of labor and capital. This ought to be conceded as a matter of right, and not as a concession forced by antagonistic combinations, only to be granted to the extent that it can be or may be compelled. On the other hand, the employé should make the interest of the employer his own, so long as he remains in his service, and strive conscientiously and faithfully to advance those interests in every proper and reasonable manner.

We believe that it would pay the managers of any telegraph organization to concede to its employés a direct pecuniary interest in the profits of the business in addition to the stated compensation accorded to them. It would identify their personal interests with the success of the undertaking, would make them economical of the property and time (which latter is an important item in telegraphy) of the company. It would offer an inducement which is now wanting for improvement of the standard of ability and efficiency of the employé, and would guard against the introduction into the service of mere time servers. As we have heretofore ar-

gued, and as is patent to all intelligent observers, the standard of ability and efficiency of telegraphers at present is too low, and continues so because there is not adequate inducement for its elevation and improvement. Such a practical coöperation as we have tried to indicate would supply this inducement, and the effect would as certainly follow the cause in this case as in any of the natural processes. The lack of ability and inefficiency would be found to have a direct and material unfavorable influence upon the mutual welfare, and the means would speedily be found for remedying the difficulty. That this remedy can only be applied effectually by the joint action of all parties we believe is a fact which cannot be successfully controverted.

We do not claim for the telegraph employés the right to manage the business of the companies. That belongs to those who furnish the capital on which the business is established and conducted. We do claim for them, however, a participation in the results of the union of capital and labor; and we believe that the best form which this concession can take is a direct though limited share in the pecuniary profits of the enterprise.

The great defect of labor organizations we believe to be that, encouraged by partial success, they have come to claim too much, and more than employers can concede with safety to themselves or a due regard to the interests of both capital and labor. The consequence of this, and of the too frequent short-sightedness of the employers, is an antagonism between capital and labor, which is vastly detrimental to all parties and to the welfare of the community. We desire that telegraphers may avoid this antagonism, and it may be avoided by the adoption of the policy which we have advocated in this article.

Telegraphy may be made much more profitable and reliable, as a business, than it is at present. By the introduction of improved instruments and processes; by the elevation of the standard of proficiency, knowledge and ability of the fraternity; by the improvement of conductors and insulation, and by a utilization of all the time in the use of telegraph lines, their capacity for business and for earning money may be very largely increased. With these a further reduction of charges for telegraphic service to the public would be possible and profitable, and popularise the telegraph to a still greater degree than at present. With such an improvement what little demand there may now be for a Government telegraph would cease, for it would be evident that no Government telegraphic administration could produce equally favorable results. The demand for a Government telegraph is a demand that there shall be effected, at a large outlay from the public treasury, and at the expense of the whole people, whether they use the telegraph much or little, or indeed not at all, what under the system we have attempted to outline could be much better and more economically effected. Let all parties in the telegraphic interest then consider this matter calmly, dispassionately and sensibly, and if our views meet with approval let steps be taken without unnecessary delay to realise them in practice. We shall then have a model telegraphic system, and one in which there will be no occasion for antagonistic combinations of capital and labor, and one which will realise a prosperity hitherto considered impossible.

Are Telegraphers Disposed to "Euchre" Each Other?

A FRIEND, who has been interesting himself in obtaining subscribers for THE TELEGRAPHY, forwards us the following note, which was sent to him in reply to an application for a subscription:

"FRIEND J—: No doubt that the paper you speak about (THE TELEGRAPHY) is a good one, but you know operators are a class that won't stick together—would rather work against one another than try to help. How often is the case where one euchres another out of a situation. Now, if they would form a brotherhood as engineers and conductors, and be men of word and defend each other to the last, I would be right with them; but as it is * * * I think the best plan to go it on an independent scull. Hoping you may be successful, I remain, yours truly, T."

We should be sorry to entertain so poor an opinion of telegraphers as does the writer of the above note. It is true that there is a good deal of human nature among telegraphers, and consequently a good deal of selfishness, which fact we consider that the writer very

forcibly exemplifies. It is also a fact that there is not that disposition to stand by and defend each other's rights and interests which is desirable, but we do not believe that there is a general disposition on the part of operators to "euchre" each other out of situations—certainly not on the part of the better class of operators. It is worthy of the severest reprehension for one telegrapher to resort to dishonorable and underhanded means to obtain situations already competently filled.

The writer of the above note is evidently himself one of the very class which he blames, and it is telegraphers like him that are responsible for any lack of reliability and manliness that may be found in the profession. Instead of setting his fellow operators a worthy example, and endeavoring to bring them upon a higher plane, he is content to descend to the level which he assigns to them, and "go it on an independent scull." His subscribing or non-subscribing for THE TELEGRAPHY is a comparatively unimportant matter; but his debased standard of professional manhood must be shocking to every rightminded telegrapher, and we trust that his estimate of the profession arises rather from the consciousness of his own mental characteristics than from a proper appreciation of their actual status.

If the fraternity generally were like him there would indeed be little hope for their future or for that of their organ.

Distinguished Visitors.

CAPT. HALPINE, who is now the commander of the steamship Great Eastern when employed in laying submarine telegraph cables, to which work she is exclusively devoted, is in New York on a brief visit.

Capt. HALPINE has displayed great talent and ability in the management of vessels engaged in the difficult and delicate works of successfully laying cables. He has recently had charge of the steamer Vannessa, while, a short time since, engaged in laying a duplicate cable for the Newfoundland Telegraph Company from Sidney to Placentia, via St. Pierre; and after that was successfully accomplished he took charge of the Robt. Lowe, which repaired the Duxbury and St. Pierre cable, of the French Cable Company.

Mr. J. C. LAWS, the electrician of the Telegraph Construction and Maintenance Company of London, is also in the city. Mr. LAWS is an able and accomplished electrician, and superintends, on behalf of the company, the laying of the great cables which it manufactures. Both of these gentlemen will shortly return to England.

Vandalism.

WE learn that the break on the Duxbury and St. Pierre section of the French Atlantic telegraph cable, which was recently repaired, was found in the same place as the former interruption, and that in both instances the cable had been chopped in two with an axe. Probably the cable was caught by the anchor of some vessel, as the water is comparatively shallow in that vicinity, and, instead of casting it off, the cable was severed willfully, if not maliciously.

There ought to be some legislation by which, if detected, such Vandalism might be severely punished, and we hope that the matter may be brought prominently to the attention of the authorities which have jurisdiction in the premises.

Haskins' Combined Telegraph Sounder and Relay.

WE print this week the claims of a patent recently granted to Mr. CHARLES H. HASKINS, of Milwaukee, Wisconsin, Superintendent of the Northwestern Telegraph Company, for a combined sounder and relay, which is worthy the attention of managers and proprietors of telegraph lines and companies. It works without a spring or its equivalent, without adjustable points to regulate the length of armature vibration, and the local without opening one circuit by another.

Whether the PAGE patent should be finally decided to be valid or not, those who desire to avoid litigation may find in this invention what they require.

Mr. HASKINS is an electrician and telegrapher of ability and experience, and his invention may prove of great use and value.

White ants chew up the telegraph poles in Australia.

WILLIAM UNGER,
MANUFACTURER OF
TELEGRAPH INSTRUMENTS,
LIGHT MACHINERY,
MODELS, &c.
NEW HAVEN R. R. DEPOT,
Franklin Street, New York (Room 16).

A NEW BOOK.
THE ROAD-MASTER'S ASSISTANT
AND
SECTION-MASTER'S GUIDE.

An attractive and entertaining little book, by an old Road-master.
All who are in any way interested in Railroad business should read it.

Sent, post paid, for \$1. Twelve copies for \$10.

A. N. KELLOGG & CO.,
72 Broadway, New York.

MAGNETO-ELECTRIC ALPHABETICAL
DIAL TELEGRAPH,
FOR
RAILROADS, GAS COMPANIES AND PRIVATE BUSI-
NESS PURPOSES GENERALLY.

MANUFACTURED BY
HOWARD WATCH AND CLOCK CO.
E. HOWARD, & CO., Proprietors.
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It has already been extensively adopted, and has invariably given entire satisfaction.

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REGULATORS,
ETC., ETC.,
OF ALL KINDS.

All instruments and work from this establishment guaranteed to give satisfaction.

16,000 MILES

"JOHNSON'S" WIRE

USED BY THE
TELEGRAPHS OF THE UNITED STATES
DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
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Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

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" " " Sam'l O. Bishop's Insulated Wires and Cables.

" " " Brooks' Patent Paraffin Insulators.

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WITH A CENTRAL OFFICE,

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UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is made for evidence of its great

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AND

UNIFORM RELIABILITY.

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Buffalo, N. Y.,
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Cincinnati, Ohio,
Columbus, Ohio,
Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
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Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
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Savannah, Ga.,
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Taunton, Mass.,
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Worcester, Mass.,

The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only **PERFECT, COMPLETE** and **RELIABLE** System

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM
AND
POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution therefor of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original *FARME & CHANNING PATENTS*, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION of CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of **TELEGRAPHERS** in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

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These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

JONES' LOCK SWITCH-BOARD,

a most compact and reliable Switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

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KERITE,

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COMPOUND RUBBER COVERED WIRE.

SUBTERRANEAN & AERIAL WIRES,

OF THE

HIGHEST INSULATION.

We are now prepared to furnish, after an experience of three years, an Insulated Wire, which can be buried in the earth or exposed to rain and sun, or to the vapor of acids, without injury. Professor SILLIMAN, who has exposed it to the most destructive agencies, finds that it remains uninjured in an atmosphere of ozone, which would destroy gutta-percha in a few hours. It exceeds glass or any other known substance as a non-conductor.

We have made special arrangements to furnish this article for office purposes at a reduced rate.

ALSO, TO FURNISH

IRON CLAD CABLES,

of the usual size, with KERITE COVER, believing that it will exceed, in insulation for submarine purposes, ANYTHING HITHERTO MANUFACTURED.

We shall be happy to furnish estimates for any amount and size of cable, which will be found to compete with any other construction, both in quality and price.

We manufacture the Genuine ELECTROPOION BATTERY, with Patent Platina Connection, introduced by us eight years since; also, THE ALPHABETICAL OR DIAL TELEGRAPH, now extensively used in this and other cities for private lines, being easily and quickly learned by any one.

We offer for sale, among other novelties, a SOUNDER that will work practically with a single DANIELL cell, a BATTERY that does not require to be taken down but once a year, and the very best MAIN LINE SOUNDERS made.

Our CATALOGUE, embracing a large amount of new matter and description, is now ready for distribution.

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The superiority of the COMPOUND TELEGRAPH WIRE, compared with iron, consists in its LIGHTNESS, reducing by over fifty per cent. the number of poles and insulators required;

Relative TENSILE STRENGTH, homogeneity and elasticity—decreasing the liability to breakage from cold weather, sleet, etc.;

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And in its DURABILITY, which greatly exceeds that of the best galvanized iron wire;

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offer to the trade and to consumers generally, the best quality of TELEGRAPH SUPPLY GOODS and MANUFACTURES.

This Company is organized with ample capital and facilities to meet promptly any demands on it of whatsoever nature. The finest assortment of Instruments in use in telegraphic practice kept constantly on hand.

Specialties made of

Fire Alarm Street Boxes—Improved Pattern.

These Instruments will work in any circuit, and their performance is guaranteed.

Fire Alarm Electro-Magnetic Engine House Instruments.

" " Mechanical " " "

" " " for striking large Bells.

CAUTION.—Parties desiring to purchase Improved Fire Alarm Telegraph Apparatus are respectfully requested to beware of representations made by any one who professes to show our system, while really exhibiting and vending another.

An egregious case of humbug of this sort has recently come to our knowledge, and the party thereto will be prosecuted.

Also, of Dial Instruments, Repeaters, Hotel Annunciators, &c. Several Novelties in preparation; among others

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MAGNETO-DIAL INSTRUMENT,

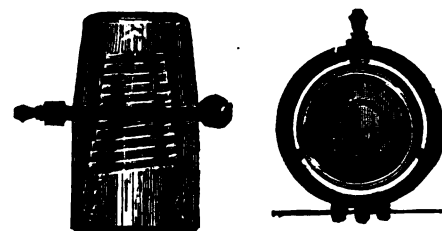
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CHESTER'S PATENT INSULATOR.



The undersigned solicits examination of some of the reasons which have induced him to recommend to his patrons and friends the Insulator exhibited above as the best and cheapest in use.

Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal.

As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

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The attention of

Telegraph Companies, Superintendents and Line Builders is called to a

New Article of TELEGRAPH LINE WIRE

OF UNEQUALLED QUALITY AND UNIFORM EXCELLENCE.

While great care and attention has been given to Instruments and Insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European Governments, only fit for fencing purposes. Many tons of such material now remain here, utterly unsaleable and unfit for use.

The researches of the able electricians of Europe have resulted in establishing a standard of excellence for Telegraph Wire far exceeding that with which we have heretofore been satisfied.

We extract from the minute and specific details a few of the requirements of a

STANDARD GOVERNMENT WIRE.

1st.—The wire supplied under this tender must be of the gauge known as No. 3, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable, and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be coiled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications a breaking strain of 1,260 pounds or No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

We now offer for sale this Uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market, to which this system of tests is uniformly applied.

We shall designate it by the Trade Mark,

CHESTER, A 1,

and our customers ordering it may be sure of receiving an article always uniform, and always the very best.

The capacity or endurance of No. 9 is 21 to 23 TWISTS UPON ITSELF in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

COMPARATIVE AND COMPETITIVE TESTS

with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 39. The omission of the elongating process would increase the flexibility and the tenacity.

Although the wire has been proved IMMENSELY SUPERIOR to that commonly sold, its price will closely approximate to that of the inferior article.

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Manufactured by Messrs. RICHARD JOHNSON &
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Long Lengths; Superior Quality; Low Prices.

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The superior quality of this Wire consists in its LIGHTNESS,
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For any number of Wires required.

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Having made arrangements with the Manufacturers for the
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The undersigned is now prepared to supply the improved and
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manufactured under the patent of Mr. J. E. SELDEN. This
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It is SIMPLE, RELIABLE, and not liable to get out of order; can be
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PRIVATE LINES.
constructed in the best and most substantial manner, and on
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Favorable arrangements will be made with line constructors,
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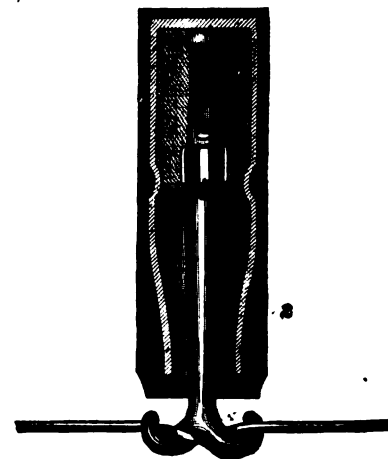
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The undersigned have on hand, and for sale on favorable
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BRADLEY'S BOX RELAYS,
MAGNETO-DIAL ALPHABETICAL TELEGRAPH
INSTRUMENTS,
made by E. HOWARD & CO. and ANDERS & CO. for Private
Lines. They require no battery, are always ready for use, and
can be operated by any person with a few minutes' instruction.
SIGNAL BELL TELEGRAPHS.
A new combination, with Key on same base with the Bell, or
otherwise, as may be required.
COMBINATION RELAY AND KEY,
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Iron Posts, Resistance Coils, Universal Galvanometer, Differ-
ential Galvanometer, Conical Multiplier, Reflecting Galvan-
ometer, Sine Multiplier, and all the varieties of Electro-Metrical
Apparatus manufactured by
SIEMENS BROTHERS.

The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 58.

New York, Saturday, September 28, 1872.

Whole No. 324

Original Articles.

Electricity at the Cincinnati Industrial Exposition.

THE third Cincinnati Industrial Exposition was opened on Wednesday, August 14th, 1872, in the spacious buildings and grounds prepared for its use on Elm, Plum and Fourteenth streets in that city. This exposition was got up under the auspices of a joint Board of Commissioners from the Chamber of Commerce, the Board of Trade and the Ohio Mechanics' Institute.

It is no exaggeration to say that the result of their efforts has been a most magnificent success. Upon entering the Exposition, upon the opening day, the writer was surprised at finding it by far the most extensive affair of the kind he had ever visited, with, perhaps, the single exception of the World's Fair, which was held at the Crystal Palace in New York nearly twenty years ago. The seven acres of available space within the buildings was completely filled in every part, and, in fact, a portion of the horticultural department had overflowed into the grounds about the main entrance. What was still more surprising was the fact that even on the day of opening almost every article and machine in the Exposition was in its place and ready for the inspection of visitors, and within two days everything was in complete working order. This fact, by the way, ought to furnish a valuable and instructive lesson to the managers of the American Institute, whose exhibitions are usually in utter confusion for at least a week or ten days after the nominal opening has taken place before matters are in thorough working order.

One of the leading spirits in the Board of Commissioners is Mr. L. C. Weir, an ex-telegrapher, of Cincinnati, and a whole-souled and wide-awake specimen of the irrepresible Western man. He now holds an important and responsible position in the Adams Express Company's service, but has never forgotten the "boys." Every year he gets up a reunion, crowned with a "big feed," for the telegraphic employes of Cincinnati, which has become celebrated throughout the West as one of the regular institutions of the city. To Mr. Weir's personal efforts the Exposition is undoubtedly indebted for the really fine collection of telegraphic and electrical apparatus which has been placed on exhibition. Among the premiums offered in this department are silver medals for the greatest improvement in telegraphy, the best telegraphic instrument for private use, the best electric railroad signal, and the best electric gas lighter, together with bronze medals for burglar alarms, lightning rods, etc. This liberal and unusual offer of premiums in this department has drawn together an unusual number of entries in this line, although the number of separate exhibitors is small.

The principal display in this department is made under the combined auspices of the Western Union Telegraph Company, the Gold and Stock Telegraph Company, of New York, and the Western Electric Manufacturing Company, of Chicago. Messrs. Gilliland and Rogers, of Cincinnati, have immediate charge of the instruments and apparatus on exhibition. A handsomely designed and elegantly finished set of the celebrated Stearns duplex apparatus, for transmitting in opposite directions over a wire at the same time, and which is being largely used by the Western Union Company, has been entered for the premium for the greatest improvement in telegraphy. As our friends, Messrs. Craig and Little, have failed to put in an appearance with the world renowned Automatic, there will be practically no competitor for the medal, and it is probable that Mr. Stearns will walk over the course this year. The set on exhibition was made by G. M. Phelps, of New York, and are, if possible, even more tastefully and elegantly got up than the ordinary instruments from his establishment, which are familiar as household words to every operator in the Eastern Division.

The Gold and Stock Company have one of their stock printers working in connection with the regular reporting line, and constantly printing the market quotations, etc., which, although it has long since ceased to be a novelty in New York City, appears to attract a great deal of attention from visitors to the Exposition. This company also show a pair of Edison's Universal Printers, for private lines, and a pair of Gray's Printers,

for the same purpose. Both these are connected up with batteries, and shown in actual operation. They are both self-motors, and work at a pretty high rate of speed for instruments of the kind, but it is a question whether their mechanism has yet been brought to a state of simplicity and perfection which will admit of their successful use on the majority of private lines, under the unskilful handling and other unfavorable conditions to which such instruments are subjected.

The Western Electric Manufacturing Company (late Gray & Barton), of Chicago, have a number of very handsomely finished instruments on exhibition, comprising keys, sounders, relays (both of the box and Caton pattern), registers and combination sets. All these are tasteful in design and creditable in execution. The register is an especially handsome one. They also show a number of minor office fittings, all of which are exceedingly well made, and some of them new in principle, such as a very ingenious combined cut-out and lightning arrester, which has found considerable favor on the Western lines.

Mr. E. T. Gilliland, of Cincinnati, has a small sounder and key for students and short lines, which is exceedingly simple, ingenious and effective.

H. D. Rogers & Co., of Cincinnati, have a large case filled with telegraphic apparatus of various kinds, the only especial novelties being the Rogers-Gilliland Dial Telegraph—a very simple step-by-step dial, worked by an ordinary key, and so arranged that, by means of a switch, it can be worked either as a dial or as a sounder, at pleasure. This is probably the simplest and cheapest dial telegraph ever invented, and in a large number of cases would answer a most excellent purpose for private lines and similar purposes.

Mr. E. C. Armstrong, of Cincinnati, exhibits a pair of Selden's Patent Printers, for private lines. These instruments are well known in New York, where a large number have been put up by Mr. S. J. Burrell. They are not very rapid, but are comparatively inexpensive, and scarcely ever get out of order, being simple, well constructed and durable. The small battery power required by this instrument, and its entire reliability, have gained for it a well deserved popularity for private line purposes. It has already been introduced to some extent in and about Cincinnati by Mr. Armstrong. Mr. A. shows a pair of F. L. Pope & Co.'s Nonpareil instruments, for learners and short lines, which have been so extensively sold during the past year. The Putt mechanical instrument is also on exhibition. This is a very ingenious invention for the use of students and amateur practitioners, and has met with a very large sale.

F. L. Pope & Co., of New York, exhibit a handsomely finished model of their Electric Semaphore Signal for Railways. This is a new invention, by means of which a large semaphore can be operated at a distance from any point, and its indications repeated back to the operator with infallible certainty. This is especially designed for points where a station signal for holding trains cannot be seen but at a short distance off, owing to curves in the road or other obstructions. A double set is also employed for signaling trains through sections of single track, tunnels, bridges, etc. The whole apparatus can be worked on one wire, although two wires are used in the model on exhibition.

Another electric railroad signal is exhibited by Marks & Mather. This consists of a telegraph wire along the track—an electric bell being inserted in the circuit at each station. The train, in passing a particular point, breaks the circuit by means of a lever operated by the wheels, and rings the bells simultaneously at all the stations.

Messrs. Post & Co., manufacturers of railroad supplies, exhibit Hay's Patent Boiler Protector—an apparatus consisting merely of an electric circuit from a battery so arranged that the current will pass through the shell of the boiler, and which has the singular effect of preventing all deposits of scale, which, as is well known, is very troublesome when hard water is used. Several years' use of this invention has demonstrated the fact that it not only checks the formation of the deposit, but will actually dissolve and remove it after it has been formed. Notwithstanding the unquestionable value of this invention, there are some amusing things in the circular furnished with it; for instance, we are informed therein, over the signature of a well known telegraph Superintendent, that "ex-

perience shows that telegraph wire constantly charged with galvanic electricity is preserved from corrosion," which, if true, shows that ungalvanized iron wires are practically indestructible if kept on a closed circuit. This must be a new discovery. We are further informed, in small capitals, that "Electricity will improve the quality of boiler iron. Bold as this assertion may seem, it is corroborated by evidence too strong to admit of a doubt." The "evidence" adduced consists of the following quotation from Davis' *Magnetism*, viz: "The laws of crystallization are supposed to result from the electrical character of the particles." The inventor also claims that the electric current will control that chemical action in boilers which generate explosive gases. This may be true and may not. The author of that circular ought to try the experiment of passing a current of electricity through water by means of a voltmeter, and collecting a little of the "gas" arising therefrom and touching a match to it. He would find the effect to be at once startling and sudden. However, he may rest assured that there is no danger that his invention would get up an explosion, and quite as little danger that it would prevent one, if it were true that explosions ever do arise from gaseous emanations, which is doubtful.

It would be advisable for the proprietors of this really meritorious invention to modify that circular a little.

The Western Union Telegraph Company have not done themselves any particular credit in the manner in which they have fitted up their telegraph office in the Exposition. It is located in perhaps the most conspicuous place in the main building, and consists of a cheap looking square pine pen, uncarpeted, and utterly destitute of the slightest attempt at ornament, which forms a strikingly unpleasant contrast to its beautiful and tasteful surroundings. It would have cost but little to have fitted up an office with neatness and elegance, and placed an operator in it who was sufficiently familiar with the English language not to hang out a banner on his outer wall headed with the singular caption of "*Bullaten*." In justice to the enterprising manager of the Cincinnati office, Mr. F. A. Armstrong, it should be stated that he unquestionably did as well as he could with the limited appropriation at his disposal. It would, perhaps, hardly have been worth while to refer to this matter, except from the fact that the shabby appearance of the office was the subject of a great deal of unfavorable criticism among the visitors to the Exposition—a knowledge of which fact will, it is to be hoped, induce our Western Union friends to do themselves better justice next time.

This closes the list of electrical apparatus on exhibition at the time of the writer's visit, although it was understood that some additional articles were to be placed on exhibition by Mr. Rogers. Taken altogether the show was a very creditable one, and represents very fairly the present state of electrical science in this country. This department seemed to possess extraordinary attractions for visitors, as it was constantly surrounded by a dense crowd, especially whenever the printing instruments were in operation.

The writer would take occasion to express his thanks to the fraternity in Cincinnati—especially to the Messrs. Armstrong, W. W. Smith and E. T. Gilliland—for the numerous courtesies and facilities extended to him during his brief visit to that city. To Mr. L. C. Weir, also, he, in common with all telegraphers visiting or otherwise interested in the Exposition, would acknowledge obligations for favors and courtesies almost too numerous to mention. F. L. P.

Electricity on a Rampage.

The Toledo *Blade* tells a nice lightning story, which, if not quite fiction, will bear repeating: "A bolt of lightning took a great many liberties with the things at the telegraph office at Goodman, Miss., some evenings ago. It melted the wires, danced a hornpipe on the head of a negro, unhinged a door, and disappeared through a window, smashing it in its progress to 'smithereens,' and altogether playing the very old Harry generally. The operator says that at the time of the concussion he felt like as if heaven and earth had kissed each other, and that for hours after his head felt as if a pile driver had collided with an earthquake."

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

The Plug Factories Once More.

NEW YORK, September 18.

TO THE EDITOR OF THE TELEGRAPH.

THE editorial on "The Scientific Education of Telegraphers," which you printed in THE TELEGRAPH of September 7th, has afforded much gratification to many of the readers of our organ. Its exposé of the rascalities practiced by the aptly termed "plug factories," or, as they are termed by their managers, "Telegraph Institutes or Colleges," meets with the approbation of all telegraphers who desire to see the profession elevated instead of debased. It is surprising that these fellows, as a general thing utterly ignorant of even the slightest smattering of electrical science, and frequently of more than the merest rudiments of the telegraphic art, should find as many victims as they do. Their lying circulars are scattered abroad, principally in suburban and country localities, and it is not until they have secured the whole or major part of the stipulated plunder that the swindle is discovered. Recently a new institution of this kind, engineered by a plug operator named Randolph, has been started in this city, in which it is understood certain officials of the Western Union Company are interested, or at least allow their names to be used as endorsing the affair. His advertisement appeared in the official organ of that Company, and was referred to in THE TELEGRAPH at the time. If any parties have money to waste it will, no doubt, be a good place to put it for permanent and profitless investment, in paying tuition in this new manufactory of plug operators. Against such a school or institution as is indicated in the article in question teaching electrical science, and the higher branches of the telegraphic art, there could be no reasonable objection or complaint. The teachers known must be persons who have themselves some reputation as scientists, and at least sufficient practical knowledge of telegraphy to occupy respectable telegraphic positions, which few if any of the present so-called teachers of telegraphy can do. It is certainly high time that steps were taken to elevate the professional standard of the telegraphic fraternity, and that there should be a cessation of the flood of ignorant and unqualified plugs that are constantly being turned out by such institutions as have been referred to; and, so far as my knowledge extends, this class comprises all existing telegraph schools in the country. I will not except even the much vaunted Cooper Institute School of Telegraphy.

OPERATOR.

Personals.

Mr. J. E. HURLEY has resigned his position at Ogdensburg, N. Y., with the Dominion Telegraph Co., and accepted a position with the Western Union Co., on the night force, at 145 Broadway, New York.

Mr. JOHN GAY, for a number of years past employed in the Albany, N. Y., office of the Western Union Company, has been compelled to resign his position on account of poor health. He has gone to Colorado, where he expects to settle. We earnestly hope he will succeed in regaining his health.

Mr. M. J. BARTLEY, who has been employed in Colorado for a year past, has, after a couple of months' visit with his Albany friends, again returned to the west.

Mr. THOMAS STEWART, Jr., in charge of the Union Hotel office, Saratoga, has accepted a permanent position in the Albany Western Union office.

A letter received in Washington from Prof. TYNDALL says that he will take the steamer that leaves England to-day for this country, and that he will remain here about three and a half months.

Capt. HALPINE, of the cable steamship Great Eastern, and Mr. J. C. LAWS, electrician of the Telegraph Construction and Maintenance Company, sailed for Liverpool in the steamship China, Saturday last, Sept. 21.

Mr. J. K. HANSON is the agent and operator of the C. P. R. R. at Tulare, California.

Mr. C. M. VALLER is agent and operator of the C. P. R. R. at Goshen, California.

Mr. CHARLES C. LIVINGSTON is operator at the Merced, Cal., office.

Mr. CHARLES M. HUBBARD is agent and operator for the C. P. R. R. at Modesto, California.

Mr. CHARLES CRALL is the manager of the Atlantic and Pacific Telegraph office at Stockton, California.

Mr. CHARLES WASHEIM is manager of the office of the A. & P. Telegraph Co. at San Jose, California.

Mr. W. H. HAYDOCK is agent and operator for the S. P. R. R. at Belmont, California.

Mr. CHARLES BANVARD is agent and operator of the Central Pacific R. R. at Tipton, California.

The Telegraph.

By Cable.

CONCESSION FOR A TELEGRAPH CABLE BETWEEN BRAZIL AND PORTUGAL.

LONDON, Sept. 22.—The Government of Brazil has granted to Baron Mana a concession for a telegraph cable between Brazil and the Portuguese coast.

Annual Election of the Western Union Telegraph Company.

THE annual meeting and election of the Western Union Telegraph Company will be held at the executive office of the company, No. 145 Broadway, New York, October 9th. The transfer books of the company were closed September 19th, and will be reopened October 10th.

The Gallaher Gold and Stock Telegraph Company.

WE learn that the new company organized by Mr. Robert H. Gallaher, for another gold and stock telegraph for brokers and bankers, has been granted by the Governing Committee of the New York Stock Exchange the privilege of reporting from the Board room, and is to have all the facilities possible for getting quotations to send to its subscribers over Gallaher's improved printing instrument. Mr. Gallaher was one of the original incorporators of the old Gold and Stock Telegraph Company, whose machines have been in use in Wall street for the past four years. He has a new company, who own the numerous patents of the improved printing instrument invented by Mr. Gallaher himself, and already a very large number of brokers, who have the other instrument in their offices, have subscribed for his machine also. The officers of the Gallaher Gold and Stock Telegraph Company are: Thos. A. Hoyt, President; John R. Garland, Vice-President; H. Kennedy, Treasurer; Robt. H. Gallaher, Jr., Secretary. Directors: Thos. A. Hoyt, John R. Garland, Harvey Kennedy, J. L. Brownell, G. H. Watson, Charles Harney, John T. Denny, S. V. White, Robert Sewell, Robert H. Gallaher, Josiah Snow. Robert H. Gallaher, Managing Director.

The Midland Telegraph.

Mr. JOSEPH ANGELL (formerly of the Erie Railroad telegraph lines) has been appointed Superintendent of the Midland Railroad telegraph lines, vice Wm. H. Weed, whose increasing duties in the position of General Passenger Agent induced him to request of the directors that he be relieved from charge of the telegraph department. Under Mr. Wood's supervision 450 miles of telegraph have been constructed on the main line and branches of the Midland Railroad, now in successful operation. This embraces the main line from Oswego to New York, with the following branches: Utica to Smith's Valley; Rome to Clinton; Norwich to Cortland; Sidney Plains to New Berlin; Walton to Delhi; Ellensville to Phillipsport, and Monticello to Fallsburg, all working in connection with the main line and including upwards of seventy offices. Greatly increased telegraph facilities are afforded to the State by those lines, and the enterprise pays interest on cost beside the efficient service it renders the railroad company in the movement of trains and transaction of their business.—Oswego Commercial Advertiser.

Cuba Submarine Telegraph.

THE annual meeting of the Cuba Submarine Telegraph Company was held on Friday, September 13th, at the offices, Old Broad street, London; Mr. T. Hughes, M. P., in the chair.

The Chairman, in moving the adoption of the report, said that the company's line had continued in excellent condition ever since it had been opened. The gross receipts for the year had been £37,111, and the expenses £5,281—leaving £31,829 at the director's disposal, out of which it was proposed to place £3,400 to the credit of the reserve fund, which would increase it to £5,000. It was absolutely necessary they should have a good reserve fund in order to meet contingencies to which they were at any moment liable. They had, in conjunction with another company, purchased the steamship Suffolk, so that in the event of an accident to the cable they would have assistance at hand to repair it, and £2,000 had been set aside to meet this company's liability in respect to the maintenance of the ship. Not only had the local traffic exceeded the estimate, but the other business was most encouraging. The West India and Panama Company's line was finished about the beginning of March, and its opening had doubled this company's business—the receipts of the last four months being almost equal to the first eight months of the financial year. The directors had felt much regret at the loss of one of their number, Mr. McGregor, but it was not proposed to fill up the vacancy. It was the original intention to have appointed agents at Havana and Madrid, but the Spanish Government requiring accredited persons to represent the company in those cities, two of the directors had undertaken the duty, leaving two to perform the London engagement. The Chairman concluded by moving the adoption of the report and the declaration of a dividend at the rate of 5 per cent. per annum. The report was adopted and the dividend declared.

The Proposed New Atlantic Telegraph Cables.

FROM *The Colonies* (a newspaper published in London) of September 6th we take the following statement in regard to the two Atlantic submarine telegraph cables now being manufactured:

"It has been stated that there are now two new Atlantic cables being manufactured. The success attending Atlantic telegraphy being so very great there was naturally some competition for new schemes. One of these, for laying a cable from Land's End direct to New York, was brought out privately, and the contract for the manufacture given to the Maintenance Company; the French Atlantic, who had previously refused the scheme, seeing that it was likely to prove a formidable opposition, bought the matter up, and the cable is now being manufactured as the French Atlantic Company's duplicate cable.

The second scheme which came forward was essentially different. It was brought out under a company termed the Great Western Company; the contractors with whom they were in connection being Hooper's Telegraph Works, their route was different and the qualities of the cable also different. The objects being undoubtedly a direct opposition. The route selected was from a point at the Land's End to the Island of Bermuda, from thence a second cable to New York, for American traffic, and a third cable to St. Thomas, for intercepting the West Indian traffic—this cable, however, being postponed for a time. It was subsequently intended to lay an extra cable from Bermuda to the coast of South America, so as to provide direct telegraphic communication between Brazil and South America, with Europe on the one hand and the United States on the other.

The route selected for the Northern Atlantic cable is also from the Land's End, but its American landing place was to be at Halifax, from thence by a cable to Long Island and New York. The length of these two cables may be taken as follows:

Land's End to Halifax.....	2,896 knots
Halifax to New York.....	720 "
	3,616 knots
Land's End to Bermuda.....	3,225 knots
Bermuda to New York.....	762 "
	3,987 knots

so that the French Atlantic route will be nearly 400 miles shorter.

The core consists of 400 lbs. copper conductor, and 400 lbs. of alternate coatings of Chatterton's compound and gutta percha—the total weight of the core is therefore 800 lbs. per nautical mile. The core is served in the usual manner with hemp, and then sheathed with iron wire, according to the depth of water to be met with. In the deep sea portion, of which 2,650 knots will in all be required, the sheathing or protection will be 10 strands of wire and hemp, each strand consisting of a galvanized homogeneous iron wire .099 in diameter, covered with 5 yards of Manilla or St. Petersburg hemp, each strand to be passed through a mixture of tar, pitch and silica, the completed cable to have a whipping of yarn in the opposite direction and then passed through a bath of silicated compound. The other type, consisting of sheathings of various sized iron wires, No. 00 and No. 6, served doubly outside the wires, and doubly compounded.

In the shorter section between Halifax and New York there is not the same occasion for an excessive amount of conducting and insulating materials, so the core is reduced to 107 lbs. of copper and 140 lbs. of gutta percha. The sheathing of this cable is similar to that of the main section—a total amount of 68 miles of heavy shore end being provided. The manufacture of this cable has been steadily progressing, 1,100 miles having been completed; of this quantity about 480 miles has been sent down to the Great Eastern, the major portion of which has been coiled on board in an electrically perfect state. The whole of the French Atlantic duplicate cable will be completed in April next by working at the usual rate, but, if necessary, it could be completed during the present year. Captain Halpin is now engaged in making some soundings along the proposed route, so that the best possible course may be selected.

The insulation of the second or Great Western Telegraph Company's cable differs from that which we have been describing, inasmuch as the material used is India rubber, in that peculiar form known as "Hooper's." This compound is more modern than gutta percha, but authentic details of its use are much wanted, although apparently unobtainable. This is, however, the first occasion in which it will be used for deep sea purposes. The conductor is of the usual stranded form but tinned, first covered with pure rubber then with what is termed a separator, with vulcanized rubber, and finally with a jacket, the several coatings varying in weight according to circumstances. The whole core thus made is subjected to a curative process at a high temperature, which consolidates it into an apparently homogeneous mass. Up to the present time, however, the use of gutta percha is generally preferred as being safe and sure, and a material whose durability is beyond present determination.

The conductor of this cable will weigh 300 lbs. per knot, and the India rubber 250 lbs., or a total of 550 lbs. In the second section the weight will be 107 lbs. of copper and 170 lbs. of India rubber. It is curious to notice here the difference in the weight of the two sections of the several cables, which would appear to indicate differences in the opinions of the electricians of the two companies.

The core of Hooper's material is in each type and

section protected with a serving of India rubber felt, then with yarn, and finally with a sheathing of the strength requisite for the nature of the bottom and depth of the sea. These coverings differ but little from those of the duplicate French Atlantic Cable. Up to the present time about 800 miles of core have been insulated and 500 miles sheathed, but at present we are not aware of any arrangement having been made for the shipment of the cable."

Telegraphic and Electrical Brevities.

Prof. BÖRTGER, mentions as a curious fact, that patents have recently been taken out for nickel plating by a process discovered and published by him thirty years ago. He reprints his own article on that subject, published as early as 1843, in Erdmann's *Journal für Prakt. Chemie*, vol. 30, page 267.

The patent for the well known galvanic battery invented by Jean Armand Calland, patented in France May 19, 1858, and in England June 12, 1861, and in the United States October 26, 1869, expired last May, and the patent in this country expired at the same time. French patents are granted for fourteen years.

The Wonders of Eastern Telegraphic Communication.

THE active competition which exists for eastern telegraphic business from Europe has spurred up the competing companies to expedite the transmission and delivery of messages to the greatest possible extent. From time to time statements of the results are made by the competing companies and distributed to the press and public as inducements to secure patronage.

We have before us such a statement for the month of June and to July 19th last, issued by the Eastern Telegraph Company, which was formed by the amalgamation of the Falmouth, Gibraltar and Malta; Marseilles, Algiers and Malta; Anglo-Mediterranean and British-Indian Submarine Telegraph Companies, which shows wonderful speed and reliability in communication, considering the length of the lines and the number of cables which compose it.

For instance, from Hong Kong, China, to London, the average actual time occupied in transmission, as given in the cable, was 4 hours 45 minutes; the shortest time being on the 5th of June, 2 hours 52 minutes, and the longest on the 1st of June and 6th of July, 5 hours 46 minutes. From Calcutta the average time was 3 hours 24 minutes; the shortest being June 3d, 1 hour 53 minutes, and the longest 4 hours 44 minutes, June 15th. From Bombay the average time was 1 hour 42½ minutes; the shortest 27 minutes on the 26th of June, and the longest 3 hours 30 minutes, June 12th. From Shanghai the average time was 5 hours 21 minutes; the shortest 3 hours 47 minutes on the 8th of June, and the longest 6 hours 37 minutes on the 11th of July.

Owing to the difference in longitude the despatches from the far east are almost always received at an earlier hour than that at which they are transmitted by local time. Time and space are indeed practically annihilated, and soon the whole east will be embraced in one great community of interests—which consummation has been rendered practicable by steam and electricity, the two Archimedean levers which move the world.

Privileged Telegraph Communications.

THE secrecy of the telegraph has been on trial in California. In a San Francisco court the Superintendent of the Western Union Telegraph Company appeared, in answer to a subpoena requiring him to produce a book in one of the telegraph offices, containing copies of certain messages transmitted to San Francisco, to be used in evidence in a trial. The counsel for the Superintendent, Mr. Gamble, argued that this was an attempt to extend the power of subpoenas beyond legal limits. If the witness were the custodian of the book he is forbidden by the law providing for the secrecy of telegraphic despatches from revealing its contents. The book holder is to be summoned, and the judge is going to take the matter into consideration as to how far telegraphic secrecy is obligatory. The question whether certain communications to telegraph companies are or not what are technically known as "privileged communications," which the law has always held sacred from disclosure, has heretofore arisen, collaterally, in a few instances in other States. We do not recall, however, that the question ever became of enough importance to invoke the authority of appellate courts, i. e., of the last resort, to settle it, although it may, likely enough, have been adjudicated. Generally the proof relied upon, as shown by and in the communications, has been found *alimunde*, and by more direct testimony. The result in this case is awaited with interest.

THE San Francisco *Chronicle* says: "Several days since a Chinaman entered the Western Union telegraph office at noon with the following despatch to a friend at Dutch Flats: 'Ah Jim! Ah Foo die 10 o'clock. He under ground now.' The operator sent the message, and sat down to muse upon the celerity practiced by the celestials, who bury their relatives in less than two hours after death."

Miss Nettie Longfellow, a telegraph operator of Newton, Iowa, is a candidate for the office of County Recorder. Though no relation to the other Longfellow it is thought she can run well.

A Few Words to the Friends of The Telegrapher.

WE have received numerous letters highly approving our proposed enlargement, and congratulating the fraternity on the success which it will indicate for their organ. We wish to call attention to the fact that this enlargement depends considerably upon the practical encouragement which we may receive between this and the new year in the shape of additions to our subscription list. Some of the letters received speak of what will be done in this direction when the new volume commences. That is very encouraging for the future, but what we are most anxious to know is, what can be done now. The alterations which we contemplate in the paper will increase its expenses very largely, and we reckon upon increased patronage to make the experiment pay, and we ventilated the proposition so early in order to ascertain whether the fraternity would coöperate with us practically and effectively. Merely maintaining the circulation at its previous figure will not indicate such coöperation; that would be done in any event. What we want, and what we must have, is a considerable increase of the number of subscribers.

Will the friends of the paper consider this matter earnestly, and proceed to give effect to their desire for the prosperity and increased power and influence of THE TELEGRAPHER. Let every such person bear in mind that it is to him or her individually that we present the case, and ask for active coöperation. We have made our terms to agents (and all who may interest themselves for the paper) liberal, and we await the result.

A considerable number of subscriptions expire this and for the three or four weeks following. We ask a prompt renewal, and an effort on the part of each of these subscribers to induce others to join with them in supporting the organ of the telegraphic fraternity. Let all those who have souls above "euchring" their fellow operators, or who do not consider it the embodiment of wisdom to "go it on an independent scull," consider themselves agents and canvassers for THE TELEGRAPHER, and our subscription list may be doubled between this and the new year, and its influence and power for their interest and welfare vastly increased.

Taken In and Done For.

NEARLY two pages of the last issue of the Western Union official organ are occupied with a pretended "Constitution of the Telegraphers' Association," adopted January 15, 1872. It is not stated where or by whom it was adopted, or what the special significance of its publication at this time is, further than the following, which we find in a corner of the same issue, and republish for the benefit of any parties interested:

"In another part of the *Journal* we present to our readers the preamble and rather lengthy Constitution of an organization calling itself the 'Telegraphers' Association.' We give it the benefit of our circulation out of pure kindness, and to inculcate a lesson. In a future number we shall probably have something to say upon the subject. Meanwhile, digest it thoroughly."

In looking over this "Constitution" we thought we recognized an old acquaintance, and upon submitting it to certain former leading members of the organization which once made considerable stir in telegraphic circles, known as the "Telegraphers' League," they confirmed our suspicions that it was the old affair with a new name.

We are afraid that some wicked wag has vamped the thing up and imposed it upon the officials of the Western Union Company, for a consideration, as a veritable mare's nest. Such conduct is very wicked—innocence and guilelessness ought not thus to be practiced upon, and a spectre of such dire import invoked to needlessly disturb the peace and happiness of General Superintendent ECKERT, and divert that talented telegraph manager and electrical expert from his consideration of the benefits and advantages of glass insulation and the working of direct circuits through repeaters. Let us have no more such cruel pranks played off on unsophisticated officials.

Seriously, we do not believe any considerable number of telegraphers would go to work and attempt the revival of a scheme which has already failed, and that without profiting by experience, and at least seeking to eliminate the elements of weakness which have pre-

viously wrecked it when it seemed the nearest to success.

It may have been published on suspicion that some sort of an association was likely to be organized, and as an evidence that the detective system of the Western Union Company is still maintained. In any case, it is a weak and foolish demonstration, and scarcely worthy of the space we have devoted to it.

New Patents.

For the week ending August 20, and bearing that date:

No. 130,583.—GALVANIC BATTERY.—George M. Phelps, Brooklyn, N. Y., assignor to Western Union Telegraph Company.

Avoids risk of breaking of zinc by unequal contraction after casting; guards against zinc falling by button on end of stem; position of zinc adjustable.

1. The zinc pole, made of the radial arms 2 and ring segments 3 upon the ends of such arms, as and for the purposes set forth.
2. The stem *c* of the zinc pole made with a head on it, in combination with the arms *A*, open eye 6, and clamping screw 9, as and for the purposes set forth.
3. The hook 7 in the open eye of the supporting arms *A*, and clamping screw 9, in combination with the pole *d* and its stem *c*, as and for the purposes set forth.

No. 130,611.—ELECTRICAL APPARATUS FOR INDICATING DEPTH OF LIQUIDS IN TANKS. Elery F. Warner, Galesburg, Ill.

A tank or reservoir is provided with a float device operating in connection with either an electric alarm signal or an electric visual signal, or with both, so that an alarm will be sounded when the tank or reservoir is full, or the depth of the liquid indicated by the visual signal.

In combination with the tank *A* and an electro-mechanical alarm-signal, the float device *B*, for the purpose of closing the circuit and operating the signal when the tank is full, all constructed and arranged substantially as shown and described.

No. 130,612.—ELECTRIC RAILWAY SIGNAL. Elery F. Warner and John B. Odell, Galesburg, Ill., assignors of one third their right to F. H. Tubbs, same place.

Train leaving one station causes display of signals at station toward which it is travelling until such station is reached. Constant current through the line, which is shunted from certain magnets by mechanism actuated by the train.

1. In combination, the spring *O*, spring *N*, bent lever *L*, and post *P*, attached to the engine or to a car, all substantially as and for the purposes set forth.
2. The circuit breakers and closers *F F'* arranged upon the arbors *b b'* so as to be moved in the same direction by a step by step movement, by means of alternately vibrating armature levers *B B'*, pawls *D D'*, and ratchets *O O'*, substantially as specified.

No. 130,661.—ELECTRIC SIGNALING APPARATUS FOR RAILROADS. William Robinson, Brooklyn, N. Y.

Constant circuit through rails to signal apparatus, which is cut out of circuit and allowed to act when an axle and wheels bridge the rails.

1. The battery *B* and magnet *M* so connected with the rails of a section of railroad track that when said section is bridged by the wheels and axle of a car the electric circuit is changed and the signal operated through the demagnetization of the magnet *M*, substantially as specified.
2. A signal constructed partially of tubular material, for the purpose of securing lightness combined with strength, in the manner substantially as herein set forth.
3. The arrangement of the pivotal bearing of the lever *c* at a point midway between the horizontal lines of exposure and concealment of the signal disk, as shown and described, for the purpose set forth.
4. The combination of the elastic spring *t*, or its equivalent, with the levers *L* and *c* and signal disk *S*, substantially as set forth.
5. The battery *B*, in combination with the wires *k k'*, rails *a b* of a railroad track, wires *l l'*, and magnet *M*, substantially as and for the purpose herein described.
6. The additional or local circuit *r*, in combination with the magnet *M*, wires *l l' k k'*, battery *B*, and section of rails of a railroad track, for operation, essentially as described.

No. 130,662.—EMBOSSED TELEGRAPH MESSAGE FOR AUTOMATIC TRANSMISSION. James H. Rogers and John W. Rogers, Peekskill, N. Y.

In automatic transmission a metallic tape, with characters embossed or raised thereon, is passed beneath a stationary contact point, the raised characters completing circuit as they touch contact point.

The sheet metal tape *A*, provided with raised letters or characters, applied as and for the purpose described.

No. 130,770.—APPARATUS FOR LIGHTING GAS BY ELECTRICITY.—Jacob P. Tirrell, Charlestown, Mass.

Uses spark produced by automatic circuit breaker, which breaks circuit to magnets controlling step by step movement. Lights lit in succession, the current being thrown from one to the other in succession.

1. A circuit breaker located at the burner and operated automatically, substantially as described.
2. In combination with the above a lever, adapted and arranged to open and close the stop cock or valve of the burner, and carrying the circuit breaker, substantially as herein described.
3. The arms *O Q*, sector wheels *f n*, pins *i p m m'*, and wires *M N*, magnet *E*, lever *H*, carrying armature *G*, circuit breaker *J* and pawl *S*, and the ratchet wheel *R*, all combined and arranged together and applied to a gas burner for operation, substantially as and for the purposes set forth.

Recent British Patents.

No. 2,327.—E. Calahan, Brooklyn, N. Y., U. S. A., and 8 Southampton Buildings, London. TELEGRAPHIC PRINTING INSTRUMENTS. Dated August 3, 1872.

A method of setting the type wheels in their correct positions, and connecting latches or catches so positioned and operated that the type wheel moved by the step by step motion keeps turning the type wheel, that would otherwise be quiescent, until it is set or arrives at the union point. It becomes impossible for either type wheel to remain out of union while the other wheel is being operated, because a movement given to either one brings the other to its proper place, and there leaves it. Also, a switch instrument, whereby one of two or more telegraphic printing instruments may be connected with the battery, and the remainder detached.

Died.

HOTALING.—At Oheopa, Kansas, JOHNIE R., only son of BEN. S. and GERTIE R. HOTALING, aged five months nineteen days. "The Lord gave; the Lord hath taken away; Blessed be the name of the Lord."

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, SEPTEMBER 28, 1872.

Premiums and Commissions.

We have decided to make a slight change in the terms of subscription for THE TELEGRAPHER. For the future the "Club terms" are done away with. But few subscriptions are now made in this way, and the club system is more trouble and annoyance to us, our agents and subscribers, than it amounts to. Single subscriptions will remain as before, at \$2 per year, payable in advance.

We shall not at present offer any long premium list, but will make the following premium propositions: For four subscriptions to THE TELEGRAPHER, at the regular subscription price for one year, we will send a copy of the paper free to the person sending us the subscriptions.

For ten new subscribers we will give, as a premium, PICKETT's Memorial Bust of Prof. S. F. B. MORSE. This bust is what is termed cabinet size, and is finished after the style of the celebrated ROGER's groups, and is a superior work of art.

To those who may interest themselves in procuring subscriptions we will allow, in lieu of the above, for new subscribers, 20 per cent. upon the amount collected, which may be retained in cash, or we will send any books or instruments that may be desired for the amount of commission as a premium.

We trust that these propositions will meet with approval, and that the friends of the telegraphers' organ will at once use their best exertions to secure a handsome addition to our subscription list.

Another Number of The Telegrapher Exhausted.

We regret to be obliged to call upon our friends so frequently to oblige us by returning copies of certain numbers of THE TELEGRAPHER, our supply of which has been exhausted, but it is unavoidable. The reason for this is that the demand for an issue of the paper, outside of the regular subscriptions, sometimes exceeds very much what could reasonably be anticipated, and we find ourselves without a spare copy to complete files for subscribers who desire to date back their subscriptions. This is the case with the issue for August 24, whole No. 319, and our friends who have copies of it that can be spared will confer a favor upon us which will be appreciated if they will send them to us. The postage on such papers is one cent.

A Suggestion for Telegraph Managers.

THE improvement of telegraph lines is of scarcely less importance than the improvement of telegraph apparatus and processes to insure the best and most advantageous results in telegraphic operation and business. Important as the perfection of telegraph construction will be admitted to be by every telegraph manager, there has been less attention paid to it, in a scientific point of view, than almost any other department of telegraphy. The best telegraph lines in this country are susceptible of very great improvement, and the results of proper attention would be so marked as to give any telegraph company which should act effectually in that direction a decided advantage in the active competition for business and profit which now characterizes telegraphy in this country.

The men who have been engaged in telegraphic construction, in the years they have devoted to the business, have acquired a knowledge and experience which should be utilized in some way for the benefit of the lines with which they are connected. All that is needed is a sufficient degree of encouragement and stimulus to produce most excellent and valuable results.

We would suggest to those who have the control of telegraph lines a competitive trial, which shall have the effect of demonstrating the truth of the above proposition. Let the superintendent or foreman of construction and repairs each be invited to take a section of line, and acting upon their own ideas, without dictation or direction, put it in the best possible shape within

a given time. Every facility and any material desired should be furnished to them—the idea being that every man shall be incited to do his very best. A premium should be offered to the person who should show the most intelligence and the best work. When the sections are ready for inspection, impartial and competent judges should be designated to thoroughly examine the work and award the prize.

It will be found that only an appreciation of the labor and improvement developed by the practical telegraph builders is needed, and adequate facilities furnished, to insure a style and completeness of construction which has hitherto been unknown. If assured that their labors will be appreciated and due credit given, each will work with a determination which cannot fail of producing the best results. As it is now, and has been heretofore, there is little to encourage efforts to excel in construction, or to put the material furnished to the best use. The lines are shabbily constructed, the poles badly set in many instances, the insulators are not put on in the best and most permanent manner, and a line is scarcely finished and in operation before repairs and reconstruction are needed. This is all wrong, and it is mainly the fault of those who have the direction of the work. The best is in the end the cheapest, in telegraphy as in everything else, and the room for improvement in construction is very great.

We are aware that this suggestion is a novel one, as applied to telegraphy, but it is one which is worthy the attention of those who have charge of telegraph interests. More thoroughness of construction would make even inferior conduction and insulation less damaging than they now are. If a section of line in each district of the Western Union Company, for instance, could be put in the best possible condition as regards construction, the advantage and superiority would be so manifest that in future work of this description no inferior performance would be permitted.

In the close competition and reduced rates for telegraph service which is hereafter inevitable, it will be vitally essential that the lines shall be far superior to most of those heretofore constructed to afford satisfactory pecuniary results. There must be not only a more thorough system of construction but better and more enduring material must be used. That telegraph company which shall first realize in practice these requirements will have a decided advantage over its competitors. Shabbily constructed lines will not pay, and the telegraph companies, by the exercise of good judgment, and by a proper recognition of the ability and seal of the builders of the lines, can easily, and at less comparative expense, secure the much needed reform in this particular.

Men will work with a zeal and intelligence before unknown if they find that their labors are appreciated, and that superior ability is sure of due credit and reward.

Is the Old Swindle About to be Repeated?

WE notice of late the premonitory indications, with which past experience has familiarized us, that an attempt is about to be made to repeat the city telegraph line swindle. At certain intervals, dependent upon the extent of the last previous similar operation, and the amount of loss to confiding investors therein, projects for establishing a local or city telegraph system are initiated. For reasons which we have already fully stated, these projects, even if they were honestly managed—which they never are—must inevitably prove failures pecuniarily to the investors. They are usually the means of profit to their originators and manipulators, however, and this insures renewal of them as soon as the recollection of loss through the last experiment has sufficiently subsided to afford another opportunity to operate on a new set of victims.

The premonitory indications of another attempt in this direction to which we refer are these: Articles appear in local newspapers of more or less prominence on the inefficiency of the existing local telegraph facilities; statements of the unreasonable time it takes to transmit messages from one point to another in the city and its immediate vicinity, etc. These are accompanied with statements of the enormous profits which await an efficient and reliable local telegraph system. Following these are communications from "Sufferer," "Disgusted Patron," "Victim," and so on, relating experiences in the use, or attempted use of city tele-

graphs, denouncing the incompetence or indifference to public requirements of the managers and operators of existing facilities, exorbitance of charges for inefficient and unsatisfactory services, etc. As before stated, we have of late noticed these premonitory indications of a new city telegraph swindle in our local press, and we are prepared at any time to hear that the grand "Instantaneous Metropolitan Electric Telegraph Company" has been organized, with a capital of at least one million of dollars, which will furnish telegraphic facilities at every citizen's place of business and residence at any time of day or night, at a nominal compensation of five or ten cents per message. The prospectus will of course demonstrate the great percentage of profit that the investors are sure of realizing on the par value of their stock, which, notwithstanding, will be supplied to early (or late) applicants at a discount of fifty to seventy-five per cent.

Schemes almost identically of this character have been floated in this city and elsewhere, and people have been found to invest money in them to a considerable amount. It is hardly necessary to add that the investment proved a permanent one, as will others which may hereafter follow.

It is a sufficient reply to all propositions of this nature that neither in this country or Europe have local telegraph lines ever proved paying institutions. In the nature of things it is impossible that they should do so. The amount of business which can be done upon a wire, and the number of offices which can be accommodated upon it, can be mathematically demonstrated. The cost of maintaining the wire and offices, and of delivering the messages, is known, and at a rate of charges which will popularize a city telegraph system it cannot pay the actual expenses; and we know that up to the present time no city telegraph system has ever paid the actual cost of operating it from the local business alone. It costs as much to transmit and deliver a message between Wall street and Union square as it does between Wall street and Washington, while the public will not, of course, pay more than a quarter as much for the service. In order that the service should be satisfactorily performed the transmission and delivery must be more prompt in the former than in the latter case. The wires can necessarily only be occupied a portion of the time, and there is not the class of business for city as for long lines, which supplement the more profitable business and occupy the wires when they would otherwise be unemployed. The only way in which local or branch offices, as they are termed, prove remunerative, is as feeders to and distributors of the business of telegraph companies having a general telegraphic system. The local business is and must be only a secondary consideration.

The newspapers which clamor for local telegraph facilities, and aid the telegraphic bums that impose upon the parties who furnish the funds for carrying out their schemes, are very careful never to afford in their columns a view of the other side of the question. Ignorant assertions with them take the place of reason and argument, and, whether knowingly or not, they aid in the deception and swindling of those who believe their statements and act upon their assertions and advice.

Mr. Cyrus W. Field gone to England.

MR. CYRUS W. FIELD sailed for Liverpool on Wednesday last in the steamship Scotia. He goes mainly on business connected with ocean telegraphy, and will be absent several weeks. Mr. FIELD has become so accustomed to crossing the Atlantic that he thinks no more of it than most people do of a trip by water to Boston. He will no doubt be, as usual, cordially received by his many friends and business associates in England.

THE great globe which we inhabit is itself a magnet. On the one side of the magnetic equator the north end of the needle dips; on the other side the south end dips—the dip varying from nothing to ninety degrees. If we go to the equatorial regions of the earth with a suitably suspended needle, we shall find there the position of the needle to be horizontal. If we sail north one end of the needle dips; if we sail south the opposite end dips; and over the north or south terrestrial magnetic pole the needle sets vertical. The south magnetic pole has not yet been found, but Sir James Ross discovered the north magnetic pole on the 1st of June, 1831.—*Faraday*.

An electrical gas lighting apparatus has been put in operation in Martin's Opera House, Albany, N. Y., which is giving good satisfaction.

WILLIAM UNGER,
MANUFACTURER OF
TELEGRAPH INSTRUMENTS,
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TELEGRAPHERS will take a special interest in the discussion now carried on in the

RAILROAD GAZETTE

concerning the AMERICAN SYSTEM OF TRAIN DESPATCHING. The GAZETTE gives the fullest information in all departments of Railroad, and all the Railroad news.

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ASTRONOMICAL CLOCKS,
REGULATORS,
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This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

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Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

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This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

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Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
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Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
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New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
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ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

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Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

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Only PERFECT, COMPLETE and RELIABLE System

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It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

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that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original FARMER & CHANNING PATENTS, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

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The most important improvement which the Proprietors have adopted and introduced is the

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the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

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has met with the universal approbation and commendation of the

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AND THE

PRESS

throughout the UNITED STATES and CANADA.

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is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

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of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION OF CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

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JONES' LOCK SWITCH-BOARD,

a most compact and reliable Switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

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We have made special arrangements to furnish this article for office purposes at a reduced rate.

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IRON CLAD CABLES,

of the usual size, with KERITE COVER, believing that it will exceed, in insulation for submarine purposes, ANYTHING HITHERTO MANUFACTURED.

We shall be happy to furnish estimates for any amount and size of cable, which will be found to compete with any other construction, both in quality and price.

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The superiority of the COMPOUND TELEGRAPH WIRE, compared with iron, consists in its LIGHTNESS, reducing by over fifty per cent. the number of poles and insulators required;

Relative TENSILE STRENGTH, homogeneity and elasticity—decreasing the liability to breakage from cold weather, sleet, etc.;

CONDUCTIVITY—insuring great improvement in the working of lines in any condition of the weather;

And in its DURABILITY, which greatly exceeds that of the best galvanized iron wire;

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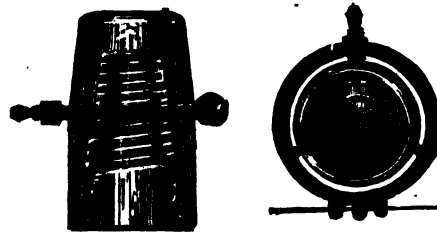
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Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal.

As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

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OF UNEQUALLED QUALITY AND UNIFORM EXCELLENCE.

While great care and attention has been given to Instruments and Insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European Governments, only fit for fencing purposes. Many tons of such material now remain here, utterly unsaleable and unfit for use.

The researches of the able electricians of Europe have resulted in establishing a standard of excellence for Telegraph Wire far exceeding that with which we have heretofore been satisfied.

We extract from the minute and specific details a few of the requirements of a

STANDARD GOVERNMENT WIRE.

1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable, and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .006 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be coiled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications a breaking strain of 1,260 pounds or No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

We now offer for sale this Uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market, to which this system of tests is uniformly applied.

We shall designate it by the Trade Mark,

CHESTER, A 1,

and our customers ordering it may be sure of receiving an article always uniform, and always the very best.

The capacity or endurance of No. 9 is 21 to 23 TWISTS UPON ITSELF in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

COMPARATIVE AND COMPETITIVE TESTS

with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 29. The omission of the elongating process would increase the flexibility and the tenacity.

Although the wire has been proved IMMENSELY SUPERIOR to that commonly sold, its price will closely approximate to that of the inferior article.

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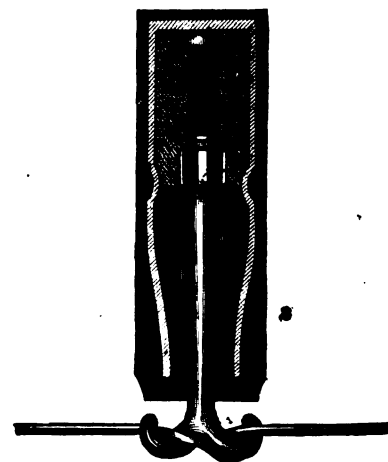
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The Telegrapher

A Journal of Electrical Progress.

Vol. VIII.—No. 59.

New York, Saturday, October 5, 1872.

Whole No. 325

Electro Science as a Part of the Education of Civil Engineers.

A Paper read before the American Society of Civil Engineers by Stephen Chester, C. E., member of the Society, at its Fourth Annual Convention, held in Chicago June 5 and 6, 1872.

THERE are few subjects with which, in a general way, the mass of the people are better acquainted than that of electricity.

Nearly every school boy passes through a period when his whole soul is absorbed in the preparation of glass bottles and Leyden jars; often maternal patience is tried to its utmost extent in the discovery of dilapidated tablecloths and varied colored garments, sacrificed in the interest of juvenile research in the school of Voltaic science.

Merchants, manufacturers and brokers are becoming more than amateur telegraphers, and in every department of industry electricity is being used as a practical agent, and practical results are obtained. Yet there is no science of which so little is understood by practically scientific men.

I propose, therefore, to submit for consideration some of the reasons which seem to me to account for the apathy of that class of men in making exhaustive research, or even to exhibit general interest in an element already largely utilized by application in almost every known art, and assuredly destined, at an early day, to hold a position of still greater magnitude and importance.

For many years, known only in the phenomena exhibited in the chambers of natural philosophy and of educational institutions, the subject of electricity was regarded not as one of special or practical utility, but simply of such slight interest as might belong to the contemplation of any natural phenomena, and one of which no man of education and culture should be entirely ignorant.

Its first application to an important and useful art was to that of telegraphy, and so limited then in this field were the resources of scientific men that the application of electro-magnetism to the purposes of distinct intercommunication was, and still continues to be regarded as an entirely new and original discovery.

We observe here that the application of electricity in this instance was not to accomplish more than a special and limited result, through the special and limited means of repeated electro-magnetic impulses. The problem to be solved was simply the production of controllable and recognizable signals at a distance. This accomplished, questions of economy, and expedient means of producing the element upon which these results depended, were for after consideration, and were naturally esteemed of relatively insignificant importance.

The rapidly increasing demand for quick communication between distant places soon made electro-telegraphy one of the most important business enterprises of the country, and under this stimulus lines sprang up in all parts of the United States and of the world; armies of employes soon became trained and skilful experts in the practice, and indeed in the general knowledge of the subject, so far as producing the special and limited results required in this specific application.

Hence, specific experimental knowledge of electricity as an applied science has been almost exclusively confined to a class of men who, however bright and intelligent they may have been, were nevertheless entirely unqualified to develop largely any important and valuable result from their relatively wide experience—because, first, they came almost wholly from a class of society early thrown into active employment with but an ordinary school education; second, no antecedents of employment or training had prepared them in capacity or disposition, for the habit of exhaustive analysis is required to develop a new science; and, lastly, their field of observation and experiment has always been limited to the accomplishment of a specific result.

In later years the many new and useful applications of electricity in arts other than electro-telegraphy have stimulated the competitive efforts of manufacturers to further and more important applications. Under this stimulus the attention of the scientific world has of late been drawn more directly to the subject, and men like Seimm, Clark, Becquerel, Sabine, Dumonceau and others, have made valuable additions to general science in elaborate works upon electricity.

But these are, for the most part, "men of the schools," and, while their books evince patient study and careful analysis, the character of our standard works is not such as we would expect and require from men who, from previous training and long habits of practically applying abstruse theorems to actual construction and problems to be solved, would naturally investigate this subject rather in its application to specific results than in its general connection with abstract science.

Again, growing out of the antecedents that I have mentioned is a popular and widely different error, that this is not a positive science (if I may use the expression in this connection); that all knowledge of the laws governing this subject must of necessity be vague, uncertain, and beyond the limits of mathematical measurement and calculation, and that this mysterious invisible element is recognizable only in and through the phenomena attending its vibrations and movements, and by which, then, the experienced expert may judge of the presence of the unseen agent with about as great a degree of certainty as the physician forms his diagnosis of disease from the varying symptoms of his patient.

On the contrary, notwithstanding the fact that our researches in this direction have been hitherto desultory, and far from exhaustive in their nature, and our acquaintance with the laws governing the operations of electricity are very limited, yet we have developed this fact with great certainty—that it is no uncertain science, but one susceptible of exact analysis, conforming to arbitrary, positive rules and calculation. This invisible, silent and mysterious force can be measured in its length, breadth and thickness with the accuracy that the beam of a truss may be measured; the consumption of material required to develop it, in known and determinable quantities, may be as closely estimated as the effective working amount of steam can be computed from the amount of coal burned; and the electro-motive effect of this force, under any given conditions, may be as exactly calculated as that of the truss of a bridge under given conditions. I do not say that this has also been literally accomplished, but such advances have been made that the ultimate result is no longer a matter even of probability.

Already European Governments have made this subject one of the principal studies in the course of military education. In this country our military and naval schools have included in the courses, with instructions of a general character, the application of electricity to specific offensive and defensive objects, and we have, both in the army and navy, schools for teaching in torpedo and signal service. It is not necessary, if the time would now permit, to point out how inadequate such instruction must be, except so far as to accomplish the specific limited object in view.

To the civil engineers of the country, men peculiarly fitted to the task by reason of special training and experience, *mechanics* rather than chemists, philosophers and abstract scientists, belongs the duty of developing this subject to the dignity of a practical science.

As my time is nearly exhausted, let me add one reason why this subject should be entrusted to the hands of practical engineers, and not to philosophers and students of abstract science only—the *public welfare demands it*.

Under cover of our general American apathy, to which I have before alluded, the popular impression has been largely cultivated that this is a vague, uncertain, eccentric power, its laws unknown and undiscoverable, and that the simple manipulations of telegraphy could be acquired only by special experts; and more by reason of this popular ignorance than from any other cause extensive telegraphic monopolies have been built up, to which we are paying a profit of 400 per cent. for every message we send by them.

Lastly, let me remark to the body of men before me, who have attained individually to reputations of which the country may well be proud, and collectively to an eminence second to that of no similar body in the world, I cannot but think it a burning shame that the greatest, richest, and politically the most powerful telegraph company in America, if not in the world, should, from necessity, if not from a less reputable reason, have been induced to secure the services of an English expert to instruct operators in the first principles of their own especial calling.

It is hardly to be doubted for a moment that this science, entering as it already does and will, through so many devices, into the manipulations of many useful arts, will in the future form an indispensable part of the education of civil engineers. In our time and generation we may anticipate this inevitable result.

Mr. Collingwood.—Will Mr. Chester state some of the important effects of electricity. It is used, I am sure, in the arts, beyond what many of us know.

Mr. Chester.—I presume it would be a very interesting subject, if time permitted, but it is one that requires some degree of preparation to present to the Society in an instructive form.

I will say that generally it is used with different devices for controlling automatic machinery—controlling it in the sense that the brain and nerves may control the muscular system; not as a positive force, but as that which governs a positive force. There is hardly a limit to the number of applications which might be devised for applying electricity in this way, in the several branches of manufacturing art.

Mr. Coryell.—Cannot electricity or galvanism be brought to bear in testing the strength of iron and steel? Will not the arrangement of the light and the position of the rays assist in determining the quality of iron and steel?

Mr. Chester.—Experiments of this kind have been made. The capacity for conducting electricity is an almost positive test of the purity of copper. The same test, or a test of a similar nature, may be applied with very exact results to iron. Experiments have been made, I understand (I do not know how far they have been carried beyond the limit of my own experience), in testing the quality of iron by magnetic impulses.

Telegraphy in France.

SOME statistics of telegraphic administration in France, recently collected and made known by M. Blavier, afford information of interest. The service is carried on by three distinct classes of employes—the general staff, the staff of maintenance and repairs, and the telegraph clerks. The *état-major* is composed of a director, 3 inspectors-general, 10 divisional, and 69 inspectors.

In 1871 there were 41,248 kilometres of aerial lines, with about 119,405 kilometres of wires; also 571 kilometres of submarine cables and 18½ kilometres of pneumatic tubes—making a total length of 41,837½ kilometres (26,000 miles), constructed at a total cost of £1,468,000, inclusive of the Algerian cables. There were 3,253 offices open, inclusive of 1,228 at railway stations, divided in three categories, viz.:

1. Principal bureaux, about 200 in number, despatching not less than 140 to 150 messages daily, and employing from 4 or 5 to 25 or 30 clerks.

2. Secondary bureaux, about 350 in number, mostly situated at the chief town of the arrondissement, and concentrating the service of the next class.

3. The cantonal, municipal and semaphoric bureaux, &c. In 1870 the total number of messages forwarded amounted to 5,663,852, of which only 5 per cent. exceeded 20 words in length.

The annual cost of a kilometre of aerial line, comprising interest and maintenance, was 14 francs (about 18s. English per mile); and the expense of a single despatch per kilometre was about the 800th part of a franc, equivalent to the rate of 133½ miles for a farthing.

Experience has shown that a few days' practice suffices for the acquisition of the power of working the needle telegraph, whereas three months' study is required before familiarity with the Morse telegraph apparatus is attained. For rapid transmission (18 to 20 words per minute), for deciphering a despatch by the ear, and for a thorough mastering of the manipulation of the Hughes apparatus—the qualifications of a skilled operator—several years of uninterrupted practice are found necessary.

To convert French currency, stated in francs, into U. S. currency, divide the number of francs by 5. To convert English currency, stated in pounds, multiply the number of pounds by 5. The above methods, although not exact, will be found approximately correct. Thus 10,000,000 of francs equal about \$2,000,000, and £2,000,000 equal about \$10,000,000.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Co-operation with Employers a Delusion, and a Practical Trades Union the Only Remedy for Existing Evils.

NEW YORK, Oct. 1st.

TO THE EDITOR OF THE TELEGRAPHIC.

FOR the second or third time since the termination of the strike the vexed question of protection for operators has been quite recently renewed in the columns of THE TELEGRAPHIC. Considerable argument is adduced in favor of different plans previously proposed, each and all claiming to be remedies for our grievances.

I propose in this communication to criticise some of these plans, together with your latest suggestion for practical co-operation with employers. If, however, you will answer one question satisfactorily, I may not see any cause for future disagreement with you. Why is it that you have abandoned the position you once took, when you defended trades unionism from general principles, and now favor the recently proposed plan for practical co-operation between employer and employee? In times past you said, "Fight for your rights; now you say, 'Clasp hands with your oppressors.'" I hope, sir, that you will answer this, and explain to your readers your exact position on this point.

But to return to your correspondents' plans. It is a waste of time and words for * * * in one communication to request the present Western Union officials to call a Convention of managers and operators, and in another to threaten that if they don't do thus and so we will organize a co-operative opposition company. These W. U. officials don't wish for and will not consider his suggestions; they manage their lines to suit themselves, and are well satisfied with their superintendents and managers' labors, both as regards the handling of business and the treatment of operators. They cannot be coaxed nor reasoned into a change of policy towards us. There is only one way that such a change can be brought about, and that is by a power more potent than argument.

Your latest proposition for a mutual capitalists'—laboring men's—co-operative association, is equally absurd. The capitalists, or rather the men who direct and control the working of the lines, are well satisfied with their profit—certainly better satisfied than if it were less, as it would be should they carry out the plan suggested by you. Really, Mr. Editor, you don't seriously think you can persuade these capitalists by argument to do the fair thing for us. Enlarge your paper, continue your editorial exposition of what I acknowledge are ideal truths, place a copy of it regularly into the hands of every Western Union employer for years, and you will not effect as much change in policy towards operators as did the feeble effort of a few hundred poorly disciplined men in January, 1870. To the selfishness of the Ortons, Livingstones, Stagers, Thos. T. Eckerts, Thos. Dolans and others, capitalists and capitalists' clerks, I charge the gradual deterioration in ability and efficiency of operators observable during the last ten years; and in the system of promotion to superior and inferior positions of selfish, unprincipled men—so prevalent in all telegraph companies—I can see the cause of that feeling of distrust so common amongst operators towards managers and superintendents.

Now, I for one am opposed to and have no faith in co-operation with these men for the purpose of protecting our interests, and never expect to be benefited as an operator by clasping hands with those who are our oppressors, so long as our complaint is just, and the result of their oppression and injustice.

Attentive readers of THE TELEGRAPHIC cannot fail to have noticed a great diversity of opinion evinced by your correspondents concerning the proper remedy for the evils complained of. As these correspondents are located at different points, I take it to be a fair inference that the same diversity of opinion on this question exists amongst the fraternity everywhere. This difference of opinion is in part the result of not comprehending the fundamental principles upon which trades unionism is based, and partly by confounding cause with effect. Until operators realize the fact that their employers cannot be persuaded by argumentative appeals to render a fairer share of the profits, in the shape of higher salaries—that the present low salaries and low standard of ability are both the effect of the past selfish policy of their employers, and that improvement in the standard of ability alone will not necessarily cause a return to higher salaries—until then nothing more will be accomplished than a periodical breaking out in the columns of THE TELEGRAPHIC of absurd and impracticable plans for remedying our grievances.

Now, sir, believing, as I do, that low salaries and low standard of ability are both the conjoined effect of a cause, and that that cause is the selfishness and injustice of employers, which we can see exercised in any and every branch of industry where there is no organized opposition to it, compels me to think that we have no other alternative than to organize on the offensive—primarily for the purpose of preventing a further de-

cline, ultimately hoping to secure an advance in salaries. Further than this, it is an undeniable fact that in our business a lower standard of ability has followed a decline in salaries; so the logical conclusion must be, that if by combination we can compel an advance in salaries then a higher standard of ability must follow that result.

In the above will be found my reasons for opposing any plan other than a pure trades union organization, on a thorough protective basis; and my idea, briefly stated, of the best mode of organizing, and the only one by which operators of the present day, having to deal with the present telegraph employers, can reasonably hope to improve their condition, is to organize, with a constitutional preamble declaring our intention of using the power resulting from combination to enforce just demands, unless they be acceded to peaceably; by declaring our grievance to be just what is—too low salaries; and by declaring the selfish policy of our employers just what it is—the direct cause of our grievance. For the internal government of our association a slight improvement upon the old League Constitution would answer. I am ready to join such an organization to-day, and I warn all operators that an association based on any other foundation will eventually prove a delusion and a snare. SENTINEL.

Telegraphers' Association.—A Suggestion.

MAUCH CHUNK, Sept. 26.

TO THE EDITOR OF THE TELEGRAPHIC.

AS Mr. F. P. Lentz has so earnestly solicited ideas and opinions from all members of the fraternity on the subject of operators' unions, I would offer a few suggestions, which, however, may be taken for what they are worth.

In the first place, I have found by experience that unless members can attend meetings of the orders to which they belong they invariably lose all interest in the order, and after a time care nothing for it. This, perhaps, is not theoretically correct, yet it will almost invariably be found the case. As a general thing, it is almost impossible to get together (especially in the country) enough first class or even tolerably good sound operators to make a lodge; and if this be accomplished, it would be a difficult matter for them all to attend regular meetings. All this I know from experience; therefore, I do not believe an organization founded and managed on these principles ever can successfully exist, as it cannot be a success unless every member feels a keen interest in it. It is true, for promoting harmony and good feeling among the operators, nothing is equal to getting together occasionally and having a social time.

I saw last winter, in the *Journal of the Telegraph*, a suggestion which I thought a very good one, and I think it would advance the interests of telegraph men in more ways than one. It is to form the operators into an association, similar in some respects to the Telegraphers' Life Insurance Association, having the necessary salaried officers, and appoint good competent men to act in like capacity to that of the superintendents of common schools—each man to have a certain district, and it to be his duty to examine every operator in his respective district who belonged to the association, at stated intervals, and give each a certificate graded according to the several merits requisite for an operator. If any one should wish to join the association let him pass an examination, and if he came up to the requirements, be given a certificate, with which he may apply for a certificate of membership. I perfectly agree with Lentz's views in regard to operators holding certificates of their qualifications granted by recognized authority.

At the present time I believe THE TELEGRAPHIC is doing more good to the fraternity than any other medium in existence; but if good may be obtained through an association of this kind, I for one would favor it very much. I would commend the suggestion to the consideration of others. J. H.

The Imposition on the Official Organ.—One Cent Reward for the Perpetrator.

PHILADELPHIA, Sept. 30.

TO THE EDITOR OF THE TELEGRAPHIC.

ONE cent reward is hereby offered for the arrest and conviction of the miscreant who perpetrated the "last joke of the season"—the wretch who, not having a due appreciation of the enormity of the offence, imposed upon the unsuspecting Western Union officials and organ the "Constitution of the Telegraphers' Association." The affair is decidedly rich, and has created much amusement hereabouts. It is understood that District Superintendent Bates' hair stood on end when the dreadful document was presented to him, with the intimation that this horrible conspiracy existed right under his nose, and that his vigorous efforts to exclude such diabolical doings from the territory for which he is responsible were treated with contempt. The dreadful document was transmitted at once to the Ex-Assistant Secretary, and, after solemn consultation, it was decided to astonish the miserable reprobates who were supposed to have connected themselves with this wicked affair, by its publication in full in the official organ.

The editorial comment on this remarkable production is as rich as the document itself: "We give it the benefit of our circulation." "We publish it out of pure kindness," "and to inculcate a lesson." Oh! dear,

how kind and thoughtful. But we imagine that by this time the Western Union officials and editor must begin to smell a large size mice! It will probably inculcate a lesson to them not to cry out another time before they are hurt, or occupy the valuable (?) space of their semi-monthly receptacle of scientific bosh with the Constitutions of mythical associations.

"In a future number we shall probably have something to say upon the subject." Oh! that is good. Probably the official organ will acknowledge the "sell" perpetrated upon it, and perhaps nothing further will be said about it! Seriously, we sympathize with Bates, Eckert, and the other Western Union officials. To think is bad enough—but to know that "there lives a man with soul so dead" as to palm off so stale an affair as a veritable reality, and that, too, upon pronounced telegraphers' friends like Bates and Eckert, is too harrowing to the feelings! The wretch should at once be sentenced to work in a plug factory for the balance of his miserable existence. ROX.

Co-operative Effort to Establish a Telegraphers' Association.

SINGHAMPTON, SIMCOE COUNTY, }
ONTARIO, Sept. 27.

TO THE EDITOR OF THE TELEGRAPHIC.

I DESIRE to print a few words in the columns of THE TELEGRAPHIC, in response to the communications which have appeared, on the advisability of organizing an association which shall include all telegraphic interests.

The benefits which will necessarily be derived from such an organization have already been so fully and clearly set forth in your columns as to leave little to be said, further than to add another testimony in favor of such an organization.

There can be no doubt that such an organization or association would be equally beneficial to operators and managers. I think that it is an association the necessity for which is urgent, for the benefit and advantage of the telegraph service especially, and have no doubt but that it would be the means of increasing telegraph business and securing better management generally, thereby affording to the public much better satisfaction. As none but competent telegraphers should be admitted as members, the certificate of the society would afford all needed evidence of the competence of those who hold them to fill positions satisfactorily.

Many of my friends (telegraph operators) entertain similar views in favor of such an organization, and now that the suggestion is up for consideration of the fraternity, let us hope that some of those who are in authority will take the matter up and use their influence in favor of such an organization of telegraphers, which cannot fail to be beneficial to all. May we, ere long, find ourselves to be members of such an association.

J. D. WHITE, Mont. Tel. Co.

Proposed Change of Plan for the Insurance Bureau.—Personals, etc.

CHICAGO, Sept. 24.

TO THE EDITOR OF THE TELEGRAPHIC.

As a member of the Telegraphers' Insurance Bureau, and consequently an interested party, I trust this communication will not be deemed inappropriate or unreasonable. Recognizing the great need of such an institution to the fraternity, and the immense benefit that has already accrued from it, yet I am one of many who believe that its sphere of usefulness can be much enhanced and extended by a little extra exertion on the part of the officers of the bureau in New York. While giving the gentlemen in question deserved credit for the ability and zeal they have evinced in the management of the affairs of the institution, it seems to me that many more members could be obtained if the system was not so much centralized. Aside from the inconvenience and delay to parties at a distance, arising from the necessity of using the mails to transact this business, it would, doubtless, give more satisfaction to members, and be an incentive to others to enroll themselves as such, if duly accredited officers were appointed by the managers of the bureau to act as "local agents." These agents could receive and grant proper applications. They should retain the funds received on account of the institution, and in case of the death of a member in their "district," could at once apply the funds on hand to meet the emergency, and then call upon the other districts to send to them their amount of the indebtedness. At stated periods each and every agent should send to headquarters at New York reports of the condition, numerically and financially, of their respective districts. I believe that if there was an agency of this sort in Chicago one hundred new members could be obtained inside of two weeks. I hope to see some concerted action taken at once in this matter. Let the measure be agitated at all events. It will do no harm, and may produce much good.

Continual "changing around" seems to be the rule here, particularly in the Western Union office. To those who have or had the pleasure (?) of working in that office the cause for this incessant going and coming is apparent.

The "burnt district" being now nearly rebuilt, the different telegraph companies are taking possession of their new quarters therein. The Pacific and Atlantic office, on LaSalle street, though not yet entirely completed, promises to be one of the finest offices in the city. The Great Western have moved into a new and

elegant office nearly opposite the P. and A. The Atlantic and Pacific are yet in their old quarters on Wabash avenue, but talk of soon moving "down town." John Donnelly, the genial and popular manager of the A. and P. has accepted a position in New Orleans W. U. office. "May his shadow never grow less." J. P. Towler takes John's place, and a better substitute it would be impossible to find. E. M. Fox resigned as chief operator of the A. and P., to engage in other and it is presumed more profitable business. Mr. Halleck, of New York, fills the vacancy thus occasioned. Mr. Dennis, chief operator of the P. and A., has accepted night managership same office. Mr. Palmer, of Pittsburg, takes Mr. Dennis' place. ELECTRA.

Personals.

Mr. J. E. PALMER, formerly of P. and A. Telegraph, Pittsburg, Pa., has accepted a situation with the same company at 124 La Salle street, Chicago, Ill.

Mr. J. J. POWERS has been transferred from the Chicago, Ill., to the Union Stock Yard, Chicago, Ill., office of the Pacific and Atlantic Company.

Mr. F. H. BORHEK has accepted a situation as operator on the Central R. R. of New Jersey, at Mauch Chunk, Pa.

Mr. MARCUS HEIN, formerly of the A. and P. Telegraph office, No. 11 Broad street, New York, has accepted the appointment of manager and signal operator with the Franklin Telegraph at New London, Conn.

Mr. M. CONSIDINE has resigned his situation with the Lehigh Valley R. R. as telegraph repairman, and accepted a similar position with the Pennsylvania R. R. at Downingtown, Pennsylvania.

Mr. C. S. MALONEY was appointed manager of the Key West, Florida, office of the International Ocean Telegraph Company Sept. 1, vice Mr. THEO. S. CLARKE, resigned, and returned home on account of ill health.

Mr. W. W. SHANNON has been appointed assistant at Punta Rasa, Florida, office of the I. O. C. T. Co., vice Mr. D. B. HAMLIN, resigned.

The Telegraph.

By Cable.

THE AUSTRALIAN OVERLAND TELEGRAPH COMPLETED.

LONDON, Oct. 2.—A despatch from Melbourne, Australia, September 11, says the overland telegraph line has been completed.

Telegraphic and Electrical Brevities.

THE Montreal Telegraph Company give notice that their lines are now extended to Colchester, on Lake Erie, and in a few days communication will be opened with Kingsville and Leamington. This movement is destined to be all important to the lake marine, as it not unfrequently happens that disasters occur in that locality, and immediate communication with Detroit has been much needed.

The Troy Chief says that the telegraph line along the Atchison and Nebraska Railroad is being rapidly pushed forward. On Saturday the wire was up to within a short distance of Fanning, and by the end of the week it will be up to White Cloud. The poles are of white cedar, and the line will be built in the most substantial manner. It could not well be otherwise, with that veteran and experienced line builder, Sol. Palmer, in charge of the work.

Brief Telegraphic Experience.

THE correspondent of the New York Herald, writing from Sydney, New South Wales, August 3, says: "The rejoicings consequent upon the receipt of telegrams direct from London to Australia, and the congratulatory messages transmitted from the antipodes to Queen Victoria and President Grant, might well have been postponed almost *sine die*."

"Like its Atlantic predecessor, the first Australian cable became dumb after an exhibition of its capabilities."

"When the announcement was made that the line was interrupted it was accompanied by the assurance that the Maintenance Company's steamer was on the spot, with all the appliances for repairing; but as this was nearly a month ago, and the break still exists, it is supposed that the task is not so easy as at first supposed. Raising a cable from the soft bed of the Atlantic and searching for it amid coral reefs are very different matters. The latter may prove a work of greater difficulty than was anticipated by the projectors of the line."

New Method of Telegraphing.

A PATENT recently granted to J. H. and J. W. Rogers, of Peekskill, N. Y., covers the following method of telegraphing:

"The inventors provide a thin and narrow conducting tape or strip of metal, on which they emboss the message in the Morse characters, and this strip they draw through a transmitting instrument which is so arranged that a metallic pen, or stylus, which is in communication with one pole of the battery, will only touch the upper surface of the characters as the strip

passes along through the machine. The under surface of the strip or tape is in communication with the other pole of the battery; consequently, whenever the stylus comes in contact with an embossed character or signal, the electrical circuit is closed and a signal corresponding to the embossed signal is transmitted over the line wire to the receiving instrument at the opposite end. The receiving instrument may be made on the plan of the Morse instrument, and is intended to be so arranged that it will indent or emboss the signals as fast as received upon a metallic strip like that used in first sending the message. Several advantages attend this method of telegraphing and recording. The transmission of messages once formed can be much more rapidly effected than heretofore.

The means for forming the raised letters on the conducting tape are or may be substantially the same as those now employed in printing telegraphic messages on the Morse system—that is to say by the ordinary needle or recording pin of the register. The forming of the raised letters can consequently be effected at any suitable distance by the ordinary telegraphic appliances and thus supply the place of repeaters. If, for example, in sending a message to California from New York, the wire beyond Chicago should be engaged, then (assuming the wire to be disengaged from New York to Chicago) the automatic repeater is of no use until the wire beyond Chicago can transmit its message; but the improved tape catches and holds the message at Chicago until the wire beyond may be used, and thus from fresh batteries repeats the message from New York on to California at least ten times as rapidly as an automatic repeater could, leaving the wire from Chicago back to New York free for other messages to New York, which the ordinary automatic repeater cannot do, acting simultaneously, as it must, with the New York manipulations.

Again, to say nothing of the automatic repeaters, all the messages arriving at a central office—as, for example, the Western Union in New York—may be delivered there on the tape by each distant manipulation of other offices instantaneously, and all these may be transmitted on to their destinations by turning a wheel, whereas now an expert must forward each message to which the wires beyond New York were not opened.—*Scientific American*.

An Important Judicial Decision.

IN the Illinois State Supreme Court, at Chicago, on Saturday, September 28th, Chief Justice Lawrence delivered the opinion of the Court in the case of Terwilliger vs. The Great Western Telegraph Company, which was decided, the whole Bench concurring, adversely to the defendants. The Court ordered that a statement of accounts of such amounts as may have been paid to Reeve on account of the construction of the line shall be prepared, and that, in the event of his having been overpaid, he shall repay the excess to a new Treasurer; that such Treasurer, as well as the other officers, shall be elected by a new Board of Directors, who themselves are to be elected by *bona fide* stockholders; that in the event of the order of the Circuit Court to this effect being obstructed, the Court shall appoint a receiver, to whom the books and papers shall be turned over; the costs of the suit in the Supreme Court to be assessed against Selah Reeve, David A. Gage and Josiah Snow.

Humors of the Telegraph.

AN intelligent telegraph operator, of the female persuasion, is responsible for addressing a despatch to "Dr. Ex. El. Morgan & Co.," which only the perverted ingenuity of the carrier converted into "Drexel, Morgan & Co." The same lady is also credited with a despatch to "J. & S. E. Norton," which, however, reached Mr. Jesse Norton in time.

Another telegraphic expert, of the masculine order, perpetrated the following, "Draw H. T. Sigmond and Parker." Original read "Draw sight, Hood & Parker." Another telegraph institute is undoubtedly wanted in the chief city of the West.

THE Federal Council has accepted the adhesion of the association of German Telegraphers, recently in session at Berlin, to the International Telegraph Convention.

Prof. Tyndall is now on his way to the United States.

The Pleasure Season.

THE neatest and handsomest of the sheets specially devoted to theatrical and other entertainments is *The Pleasure Season*, which is published and edited by J. C. FOREMAN, and printed at the American Steam Printing House of Messrs. RUSSELL BROTHERS, the printers of THE TELEGRAPHIC. It is a unique specimen of typographic art, and reflects great credit upon both the editor and printer. Its reading columns are filled with sparkling and interesting matter, adapted to interest auditors during the intervals of performance, and each number contains well executed cuts of distinguished and popular artists. It is distributed gratuitously, and furnishes, we should judge, an excellent advertising medium. The advertisements are very artistically displayed and add to its attractiveness.

New Patents.

For the week ending August 30, 1872, and bearing that date.

No. 130,702.—TELEGRAPH WIRE FROM ALLOYS. Charles J. A. Dick, Pittsburg, Pa.

1. Telegraph wire of alloys free from oxides, and composed of copper with from two to five and a half per cent. of tin.
2. Wire for telegraph purposes composed of phosphorized alloys of copper and tin, restricted to the proportions, substantially as described.

No. 130,778.—NIPPER FOR FASTENING TELEGRAPH WIRES. Christopher C. Wolcott, United States Army.

The two pairs of nippers being applied to the two ends of the line wire, their handles are grasped by the operator and turned in opposite directions, so as to wrap each end of the wire at the same time, each pair of nippers having its fulcrum upon the line wire on either side of the tie, and capable of being moved upon said fulcrum as the tie is made, and according to the number of wraps which the ends will form.

1. In combination with a grooved nipper nose, B, the laterally projecting, grooved, guiding, forcing and tying arm E, essentially as and for the purposes described.

2. In nippers having a grooved nose, B, and a grooved tying arm, E, I claim the spring link E of the handles A for closing the branches of the grooved nose B, and tying arm E to lock the nose of the nippers upon the line wire C, so as to form a fulcrum thereto upon said wire and hold them free from the operator in making the tie, as described.

3. In nippers for tying the ends of wires I claim the combination of the grooved nose B, the grooved tying arm E, the clipping arm D, and the spring link F for the handles A, the several parts being constructed and arranged for joint operation, as herein described.

For the week ending August 27, and bearing that date.

No. 130,793.—TELEGRAPH KEY. Augustus G. Davis, Baltimore, Md.

The switch is longitudinally slotted, and the slot bounded on one side by a spring. An anvil, wedge shaped, enters the slot, and firm contact is made on both sides thereof by pressure of the spring.

1. A telegraph key circuit closer, consisting of the arm F, made of two pieces, in combination with the circular wedge shaped anvil, substantially as described.

2. In combination with a telegraph key, the circuit closer F and anvil E, constructed substantially as described.

No. 130,941.—ELECTRIC SIGNALING APPARATUS FOR RAILROADS. Frank L. Pope, Elizabeth, N. J.

The operator at one station sets the signal at succeeding station, which can be released only by operator at latter station. The setting of a signal is automatically telegraphed back to controlling station. Signals counterbalance each other, and are operated by force of axial magnetism on sliding armatures.

1. A semaphoric signal, constructed with disks or "targets" of alternate contrasting colors, in combination with an electro-magnet, substantially as specified.

2. An electro-magnet actuated partially or wholly by axial magnetism, in combination with a semaphoric signal, substantially as and for the purposes specified.

3. An electro-magnet having an armature so arranged as to be held in contact with its poles by residual magnetism, until released by an opposing or demagnetizing current emanating from any suitable apparatus for generating electricity, in combination with a semaphoric signaling apparatus or an alarm, substantially as specified.

4. The combination of a semaphoric signal operated by electro-magnetism, and a secondary signal actuated or controlled by said semaphoric signal, with a reversing or releasing apparatus, so arranged that when the said signals have been set by an operator at one point or station they can only be reversed or released by an operator at another point or station, substantially as herein specified.

EXTENSION.

No. 21,329.—IMPROVED METHOD OF SENDING AND RECEIVING MESSAGES SIMULTANEOUSLY OVER THE SAME TELEGRAPH WIRE, granted to Moses G. Farmer, August 31, 1858.

The employment of an accessory magnet and an accessory battery to each instrument, in combination with the main batteries and main magnets, and with a means of reversing the direction of the current of each of the main batteries, in the manner substantially as herein set forth.

Recent British Patents.

No. 2,461.—W. R. Lake, Southampton buildings, London. ELECTRO-MAGNETIC SIGNALING APPARATUS. Dated August 19th, 1872.

Semaphoric railway signals actuated by electro-magnetism, and means for operating the signals. Improved modes of constructing semaphoric railway signals both for day and night service. Also, the combination, with a signaling apparatus, of an electro-magnet constructed to be actuated wholly or partially by axial magnetism. Also, means for utilizing the residual or permanent magnetism remaining in an electro-magnet after the exciting current has been interrupted. Also, an arrangement of electrical connections between two stations, by which a signal, after having been set at one station, can only be released at the other station. Also, means for limiting the extent of an electrical circuit wherein the rails of a railway and the axles and wheels of a passing locomotive or carriage become a part of the circuit. Also, the combination of a visual or semaphoric signal so constructed and arranged as to be seen from a distance by the engine driver of an approaching locomotive, with the rails of a railway when the said rails form a portion of an electric circuit. Also, the arrangement of a series of semaphoric signals operated by electro-magnetism at suitable intervals along the line of a railway, in combination with a corresponding series of circuit closers, capable of being operated automatically by the passage of a locomotive or train; lastly, the combination of a circuit closer with an electrical circuit compound of wire, the rail or rails of a railway track, and the axle and wheels of a passing locomotive or carriage.

No. 2,439.—W. R. Lake, Southampton Buildings, London. AN IMPROVED ELECTRO-MAGNETIC ENGINE. Dated September 15, 1871.

A series of electro-magnets arranged radially in a frame, in combination with a series of radial arms, and connected with a shaft which operates a circuit breaker. Also, making the frame which supports the electro-magnets adjustable around the central shaft, whereby the relative position of the electro-magnets, with respect to the radial arms when the electric circuit is broken, may be varied.

Died.

RICE.—At Albany, Oregon, Sept. 15, of consumption, WILLIAM B. RICE, operator O. and C. R. R., aged nineteen years.

Mr. RICE was formerly employed in the office of the Western Union Telegraph Company at Albany, and leaves a large circle of friends to mourn his early decease. Peace to his ashes.

VAN KLEE.—At his residence in Brooklyn, N. Y., on Friday, Sept. 27, Mr. E. H. VAN KLEE, formerly the contractor for and manager of the Atlantic and Pacific Telegraph Company.

THE TELEGRAPHIC FRATERNITY.

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, OCTOBER 5, 1872.

Premiums and Commissions.

We have decided to make a slight change in the terms of subscription for THE TELEGRAPHIC FRATERNITY. For the future the "Club terms" are done away with. But few subscriptions are now made in this way, and the club system is more trouble and annoyance to us, our agents and subscribers, than it amounts to. Single subscriptions will remain as before, at \$2 per year, payable in advance.

We shall not at present offer any long premium list, but will make the following premium propositions: For four subscriptions to THE TELEGRAPHIC FRATERNITY, at the regular subscription price for one year, we will send a copy of the paper free to the person sending us the subscriptions.

For ten new subscribers we will give, as a premium, PICKETT'S Memorial Bust of Prof. S. F. B. MORSE. This bust is what is termed cabinet size, and is finished after the style of the celebrated ROGER'S groups, and is a superior work of art.

To those who may interest themselves in procuring subscriptions we will allow, in lieu of the above, for new subscribers, 20 per cent. upon the amount collected, which may be retained in cash, or we will send any books or instruments that may be desired for the amount of commission as a premium.

We trust that these propositions will meet with approval, and that the friends of the telegraphers' organ will at once use their best exertions to secure a handsome addition to our subscription list.

The Page Patent.—The Attempts to Enforce it to be Resisted.

THE readers of THE TELEGRAPHIC FRATERNITY are not ignorant of the position of the independent telegraphic journal of the country upon this vital matter to the telegraph interests—the patent granted to Prof. CHARLES GRAFTON PAGE, under a special act of Congress. When the act under which this patent is issued was pending, it was represented by the gentlemen who had it in charge in both Houses of Congress—Representative MYERS in the House, and Senator PATTERSON in the Senate—to be a recognition of the claims of an American scientist to an honor which had unjustly been accorded to another person by a foreign government, for certain discoveries and inventions in magneto-electricity and apparatus, and which it was authoritatively stated would infringe upon the prior rights of nobody. Under these representations the act was passed. When the patent was issued, however, the claims were so framed as to cover certain important particulars in ordinary telegraphic machinery.

Soon after the patent was issued, and before any attempt had been made to enforce it, if such had been contemplated, Prof. PAGE died. Up to this time no intimation had been given of a design to enforce the patent against the telegraphic interests of the country. The legal representatives of Prof. PAGE, however, became impressed with the idea that he had left a very valuable property in this patent, and it was offered to various parties for sale, it being held at \$500,000. Two or three licenses were issued under it to parties who were not inclined to contest it, the principal of these being to the American Fire Alarm Telegraph Co. of Messrs. GAMEWELL & Co., and the Gold and Stock Telegraph Co. Among others, the patent was offered to the Western Union Telegraph Co., the original price asked for it being \$500,000. This was subsequently reduced to \$50,000. The Western Union Co. had an exhaustive examination of the validity of the patent made by eminent patent lawyers and experts, and declined to purchase it at any price. After the clique who now control that company organized the plan which has been so persistently followed out during the last four years, looking to an ultimate monopolizing of the telegraphs of the country, this patent was believed to offer an important and valuable aid in the realization of their schemes. Negotiations were accordingly reopened with the heirs of Prof. PAGE, and one half of the patent was purchased for the company for the sum

of \$25,000, the moiety of interest being left for the time nominally in the possession of the heirs of Prof. PAGE, in order that in its enforcement the widow and orphan dodge might be played for effect on judges and juries. Under the new proprietorship of the patent it was re-issued, and the claims amended so as to cover all the vital points of the telegraphic instruments of every description in common use, and the principles upon which such instruments could be constructed.

The plans were now about ready to be carried out, and nearly all the leading patent lawyers received retaining fees in order to secure the services of such as were desired in enforcing the patent, and to prevent others from being available for the defence. In due time actions were commenced—the first being against the City of New York, for infringement of the patent in the instruments used in the police telegraph, another against the Deseret Telegraph Company of Utah, and one or two others up to the present time. The object is to obtain two judgments, either by default or collusion, so that under the patent law injunctions may be obtained. Up to this point all had been plain sailing, THE TELEGRAPHIC FRATERNITY alone having called attention to the monstrous character of the patent, and its destructive effect upon all telegraphic interests antagonistic to or competitive with the Western Union Company.

At length, however, the interests attacked have taken the alarm, and a vigorous resistance is to be made to the enforcement of the patent. An organization of opposing interests has been effected, able counsel have been employed, and are now engaged in preparing an effective defence. The validity of the patent can be successfully impugned, and will be. The counsel employed are in no respect inferior to those on the other side, and in intimate acquaintance with telegraphic and patent law are even better qualified than those arrayed against them.

In the legal contest which is about to ensue the entire subject of telegraphic invention will necessarily be exhaustively investigated, and many facts which are familiar to the few who have given this matter an examination will be brought prominently into notice. The truth in regard to the real and original invention of electric telegraphy, and the apparatus by which it was effected will be brought to light, and it is safe to say that the result will astonish the public, and will deprive certain parties of honors popularly accorded, but to which they are not justly entitled. The evidence already attainable is of the most convincing character, and the facts will be brought out without regard to any previous standing or reputation.

This contest will necessarily be long and expensive. As the present owners of the PAGE patent announce their determination to enforce their presumed rights under it, the contest is unavoidable, and must be met.

The proprietors of every telegraph line and company which does not desire to be destroyed by the great corporation which seeks to overwhelm them—the managers of railroad telegraphs, the manufacturers of telegraphic and electrical instruments and apparatus, inventors and owners of telegraphic patents and franchises—are all vitally interested in defeating this attempt to monopolize and exact tribute from the business in this country. These will all be called upon to unite in this opposition, and a regard for their own interests will suggest the only course that they can reasonably pursue. Divided among so large an interest the burden of the defence will not be onerous to the different parties. We have no doubt that the response will be general, prompt and favorable. The public are not less interested in the matter, as a consideration of the result of establishing such a patent will show, and, if it could be done, every person who uses telegraphic facilities would be taxed to put millions of dollars in the coffers of the ring who seek, by means of this patent, to enrich themselves at the expense of the people of the country.

We have made this statement in order that it may be known that so monstrous an outrage is not to be quietly submitted to, and that those who are called upon to unite in averting such a calamity may be informed of the danger which threatens the telegraphic interest, and prepared to respond promptly.

"Laughter holding both his sides"—telegraphers reading the solemn lucubrations of the official organ on bogus Constitutions and the wickedness of secret societies, which exist only in its imagination or the fertile brain of some practical joker.

The True Policy for the Telegraphic Fraternity.

We print on another page a well written communication from our old and valued correspondent, SENTINEL, on the true and effective policy which should be adopted by the telegraphic fraternity to secure their rights and improve their condition. We do not propose to discuss the whole subject at this time, as we have neither time or space to do so, but to answer the question which he puts to us personally. He asks "Why is it that you have abandoned the position you once took when you defended trades unionism from general principles, and now favor the recently proposed plan for practical cooperation between employer and employé?"

In the first place, our correspondent is incorrect in supposing that we have abandoned any position which we have previously maintained. There are evils and tyrannies connected with trades unions of which we have never approved, and while THE TELEGRAPHIC FRATERNITY has stood by the telegraphic fraternity in every attempt which has been made to secure their rights or improve their condition, and will continue to do so, it has never given an unqualified support to the principles upon which trades unions have been conducted. Employers have rights as well as employées, and it must be acknowledged that these have not always been respected or regarded by trades unions. Our opinion is the same now that it always has been, that reforms in telegraphy, to be effective and permanent, must proceed from cooperation between employers and employées. How this cooperation is to be secured is the question to be considered. If it be practicable to organize an association among the fraternity so compact and powerful that it can fairly claim to represent them, then we believe that its suggestions would be received with respect and fairly considered by telegraph employers and managers. Our anticipations of permanent benefit to be derived from the League were based upon the idea that it would become so general as at the proper time to present to telegraph managers a well digested and considered scheme for adjustment of mutual relations, which, backed up as it would be by such an organization, might be favorably considered. This anticipation was destroyed by the precipitation of the strike, for which the organization was unprepared, and against which its lack of a central or governing power made it powerless to guard. We do not believe in strikes—except as a last resort, when evils become intolerable and can be reached in no other way—in short, like war, they should be the dread arbitrament, engaged in only after due preparation and a full consideration of the cost, and the conclusion that the distress and damage which must result will be compensated for by the benefits to be derived from success.

That Telegraphers' Association.

GREAT amusement has been caused by the republication of the Constitution of the defunct Telegraphers' League, in the official organ of the Western Union Telegraph Company, as that of an existing telegraphers' association. A correspondent, writing from Philadelphia, where the fraud is understood to have originated, rather pokes fun at the Western Union officials in connection with the "sell," and it is truly a most ridiculous demonstration on the part of the company. No such association exists, and the so-called Constitution is almost *verbatim* that of the League.

We do not know how badly scared our Western Union friends may have been, but it has afforded all outside of the official ring a season of mirth and laughter, which, while it must be somewhat mortifying to the parties sold, will no doubt aid in maintaining a healthy and happy frame of mind on the part of the telegraphic fraternity generally.

This having been disposed of, the next "sell" is in order, and it is evident, for those of this peculiar character a ready market can be found.

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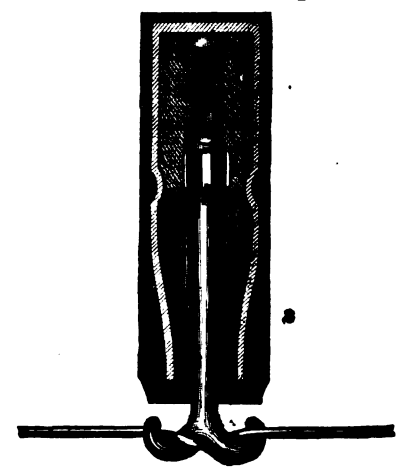
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The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 60.

New York, Saturday, October 12, 1872.

Whole No. 326

Every Day Problems in Practical Telegraphy.

By F. L. POPE.

NOTWITHSTANDING the great advance which has taken place within the last few years in respect to what may properly be termed the science of telegraphy, yet it is an undeniable fact that we still find many time-honored and popular electrical fallacies, which, having once become securely fixed in the mind of the average telegraph operator or superintendent, seem to bid defiance to all efforts to dislodge them.

I was quite forcibly reminded of the above mentioned circumstance on a recent occasion, in conversation with a very worthy and excellent line man—one who takes a just pride in the neatness and thoroughness with which he does his work. He had a few weeks before finished a job of running a large number of wires—perhaps 25 or 30—into a new office. The line wires, all of No. 8 gauge, were brought down from a single pole, perhaps 50 feet from the building, carried underneath the roof of a broad overhanging verandah, where they turned at a right angle and entered the building through hard rubber tubes over the windows. The office wires were connected to the line wires inside the office. The whole of the outside work had been done with No. 8 iron wire and glass and pin insulators, and well and carefully done, too; but a few weeks had been sufficient to develop some very prominent defects. The short sections of heavy wire would, of course, only remain taut when strained to the utmost practicable tension. The turning of the insulators upon the wooden pins, and the giving way of the pins themselves under the strain at the angle, although slight, had been sufficient, in connection with the yielding of the pole, to allow the wires to slacken. This, of course, caused numerous juncient kinks and bends to appear, and utterly spoiled the looks of the job, to say nothing of giving rise to well founded apprehensions of future crosses.

My friend, the line man, naturally felt a little troubled at this result, after he had taken so much pains with the work, but remarked, with much show of reason, that no one else could do it any better with No. 8 wire and glass and pin insulation. With No. 12 wire, and hard rubber suspension insulators, he thought he could have made a handsome and permanent job. But the superintendent would not allow this, alleging that the No. 12 wire "put too much resistance in the line," and that the kind of insulation mentioned above "was not as good as glass."

If we examine this matter a little we shall find a good specimen of a current telegraphic fallacy, which no one seems to have thought worth his while either to prove or disprove. I have even heard it asserted, by persons laying claims to superior telegraphic knowledge, that in the case mentioned the capacity of the whole line would be reduced to that of a No. 12 wire!

Suppose we allow 100 feet of wire, from the pole to the office window, for each line. This would be 200 feet (in and out) in each through circuit. If we estimate the resistance of the No. 8 wire at 16 units per mile, and that of No. 12 at 36 units per mile, which is about the average, we find the resistance of 200 feet of each kind to be respectively 0.4 units and 1.3 units. The increase in the resistance of the line, caused by the substitution of the small wire would, therefore, amount to precisely *nine tenths* of a unit! An ordinary telegraph line of 150 miles, in good condition, usually gives, including relays in circuit, from 4,000 to 6,000 units resistance. The damage resulting from the addition of less than one unit to the above amount is certainly largely overestimated in the popular mind! Even if this amount of small wire were inserted at each of 20 stations the effect upon the circuit would not be perceptible, being scarcely more than one tenth of the additional resistance caused by the insertion of a single relay. The real objection to the use of small wire is confined to cities and localities exposed to smoke and corrosive gases, where a small wire is very quickly eaten away by oxidation, if not protected by a coating of paint or tar.

In respect to insulation the case is much the same. Suppose the common rubber insulator was three times as bad as the glass and pin (which it isn't), and it required six of them to run the wire in and out, the escape from the six would in that case be equal to that from 18 glass insulators, an increase in the escape

equal to the addition of 12 glass insulators. On a line of 150 miles this would increase the escape about $\frac{1}{30}$! But the Brooks or improved rubber might be used in place of the old rubber, in which case the loss would be below computation.

"The bearings of the above observations lies in the application thereof." If it is necessary to use a No. 12 wire, in reasonable amount, to make a handsome and permanent job in running into an office, no one need hesitate to do so for fear of any practical ill effect arising therefrom. Of course, if the amount of small wire inserted is measured by miles instead of feet, there will be a perceptible diminution in the strength of the circuit.

I was once called upon to prescribe for a certain "short wire," which, although it had been put up a considerable length of time, I was informed had never worked satisfactorily, or indeed at all, except upon rare occasions. All the telegraphic talent in the vicinity had endeavored to make it work, but thus far without success. The line was three miles long, and had five offices on it, and was supposed to be worked by a carbon battery of seven cups. I suspected the ground connections were faulty, and found upon examination that one of them consisted of an iron rod driven three or four feet into a gravelly soil, and the other, a piece of sheet iron, of perhaps ten square feet, buried in tolerably damp sand, resting on a bed of gravel. This looked well enough to all appearances, but the application of a galvanometer told a very different story, and at once revealed the source of the trouble. I give the measurement from my note book:

Resistance of line.....	58 units.
" " ground at A.....	430 "
" " relay at A.....	411 "
" " " " B.....	225 "
" " " " C.....	537 "
" " " " D.....	150 "
" " " " E.....	362 "
" " ground " E.....	240 "
Total resistance.....	2,413 "

This is equivalent to a good line of 100 miles, with five ordinary relays, of 150 units resistance each. It is not much to be wondered at that it failed to work well with seven cups of battery, especially in a dry season.

If it had been possible in this case to make good ground connections with gas and water pipes at each end, and substituted relays prepared expressly for the line, of say twelve units each, the total resistance would have been about as follows:

Line.....	58 units.
Five relays (12 units).....	60 "
Ground.....	0 "
Total.....	118 "

Such a line and instruments would work well on one cup of carbon battery, and very strong on two.

The best that could be done, however, in the case mentioned was to get a ground on a pump at one end, and put the plate in a stream of water at the other. The line was then equipped with relays of 150 units. The seven cups of carbon worked it very well indeed after these changes were made.

The moral of the above narrative is, that a galvanometer is a very handy implement to have about the house, especially in localities where Ohm's laws are in force.

A friend of mine, who has charge of a railroad line on which the Callaud battery is used for the main circuits, complained that much trouble was experienced from the connecting wires being eaten off by the action of the battery. As this is not at all an uncommon circumstance, it occurred to me that it might be advisable to point out the cause of the difficulty. In this instance the copper was in the form of a cup two inches deep, nearly filling the bottom of the jar. The connecting wire was soldered to the perpendicular side of the cup, and in most cases the gutta percha had been removed for a quarter of an inch or so above the upper edge of the cup. Occasionally the division line between the copper and zinc solutions would stand just at the top of the copper cup. This formed a local galvanic circuit, consisting of two dissimilar liquids and one metal, by means of which the latter was soon destroyed at that point. The remedy is to attach the wire at the bottom of the copper plate, and have the gutta-percha protect it all the way down to the lowest point. Copper wires sometimes break off at the point where they

are soldered, owing to the fact that this metal, when heated and allowed to cool slowly becomes brittle. Its action in this respect seems to be, curiously enough, the exact reverse of that of iron.

When oil is used on the surface of a Callaud battery to prevent evaporation, it combines with the deposit of black oxide on the zincs when the latter are taken out, and makes it a disagreeable and troublesome job to clean them. If the zincs are dipped for a few seconds in a solution of caustic (washing) soda and water, after being taken out of the battery, the deposit comes off by the aid of a common battery brush with the greatest ease, leaving the zincs perfectly clean. The same solution is useful to apply to joints after soldering, as it neutralizes all the remaining acid, which would otherwise corrode the wires to a serious extent.

It is a great convenience, in using the Callaud battery, to have it placed so that its internal condition can be seen without difficulty. Mr. John Suter, division operator of the Pennsylvania R. R. at Pittsburgh—who, by the way, is one of the most sensible and practical telegraph men I have ever met—places his Callaud locals in a case, with shelves and glass doors, on the wall of the office, about four or five feet from the floor. One great advantage in this arrangement is that the batteries are far less likely to be neglected by the operators when in plain sight than when stowed away in a box in some out of the way corner. Moreover, a battery kept neat and clean, and inclosed in a handsome case, is decidedly an ornamental addition to the fixtures of an office.

The German Telegraphs.

In the year 1849 there were only 290 German miles of telegraph, with 25 stations and 61 sets of apparatus, worked by 262 officials. The receipts were 8,836 thalers, and the expenses 514,227 thalers, of which, however, 419,500 thalers were spent in extending the lines, so that the working expenses amounted to 94,727 thalers, or more than ten times the receipts. The number of telegrams that passed over the lines in that year was 35,494. At the end of last year there were, in Prussia alone, 3,385 German miles of telegraphs, with 11,396 German miles of wires, 1,130 stations belonging to the State, and 1,485 belonging to railways, but authorized to receive and forward private messages. There were 2,715 sets of apparatus, and 4,596 officials employed. The number of telegrams sent off in 1871 amounted to 5,213,837 for the interior, and 2,846,176 for foreign states, not including 32,641 official messages for abroad. The receipts were 2,500,007 thalers, and the working expenses 2,419,538 thalers, showing an excess of receipts of 80,469 thalers. The Prussian telegraphs, like those of all the other States of Germany, are now all amalgamated and worked for account of the Empire, forming a separate branch of the Chancellor's Department.

The telegraph treaty between Germany and Austria comes into operation on the 1st of January next, remaining in force for an indefinite period, but it may be dissolved at any time by either party after twelve months' notice of such intention shall have been given. The following are the principal stipulations: In the mutual traffic between any of the telegraph stations in the Austrian Hungarian Monarchy and those of any part of the German Empire the charge for a single rate of twenty words is fixed at one Austrian florin or 20 groschens, whilst telegrams from one frontier station to another on the opposite side pay only half of the above charge. For this purpose the territory on both sides of the boundary line is divided into squares, in such a manner that every degree of latitude is divided into five, and each degree of longitude into three equal parts, and at the points where these lines cross are drawn meridians and parallels, by which fifteen squares are formed; and telegrams from any station to another in the same square are charged at the reduced rate. With regard to messages to more distant countries and only passing through the territory of either of the high contracting parties, the charges settled, or which may at any future time be settled in international treaties, are to be in force; but a special exception is made for telegrams between the Austrian dominions and Holland, passing through Germany, such telegrams to be subject only to the charge of 80 kreutzers or 12 groschens. On the other hand, Austria is to have the right to

charge on such messages a terminal tax of 40 kreutzers or 8 groschens, by which, including the terminal tax agreed to by special convention with the Netherlands, the total expense of such a telegram comes to 1 fl. 20 kreutzers, or 24 groschens. The money paid for messages between Germany and Austro-Hungary belongs to the government of the country where it is raised; but the rates paid for messages in transit must be accounted for according to the stipulations of the International Treaty; though in all messages to and from the Netherlands the charge is to be made without reference to the number of words contained in each telegram, but simply by the number of messages, at the average rate of 60 kreutzers, or 12 groschens. With regard to the terminal charges for telegraphic correspondence between the Austrian monarchy and the kingdom of the Netherlands, the accounts will be made up and balanced by the respective administrations of the telegraphic departments of those states. Till the charges stipulated in the International Treaty for the territory of the Telegraph Union are superseded by special rates for Austro-Hungary and the Empire of Germany, the provisions of the International Treaty concluded at Baden-Baden on October 25, 1868, remain in force as binding on all parties concerned.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

The Patent for the Callaud Battery not yet Expired.—Infringers to be Prosecuted.

NEW YORK, October 7th.

TO THE EDITOR OF THE TELEGRAPHER.

IN THE TELEGRAPHER of the 28th ultimo you erroneously publish that "the patent for the well known galvanic battery invented by Jean Armand Callaud, patented in France May 19, 1858, and in England June 12, 1861, and in the United States October 26, 1869, expired last May, and the patent in this country expired at the same time. French patents are granted for fourteen years."

Will you do justice to Mr. Callaud by rectifying the above statement in your next issue, and stating that the first United States patent, granted to him October 26th, 1869, for seventeen years from May 14th, 1858, does not expire until May 14th, 1875, and that a second patent was granted to him by the United States Commissioners, for additional improvements in galvanic batteries, on the 17th of October, 1871, expiring October 17th, 1888, which covers the Callaud batteries now introduced in this country, and that Mr. Callaud has directed his lawyer here to prosecute any one infringing upon the above patents, now submitted to you by,

Yours respectfully,
HENRY R. DAVID,
Attorney in fact of Jean A. Callaud,
17 Platt st. (up stairs), New York.

A Fatal Accident.—Sudden Deaths of Operators of the Kansas Pacific Railway Line.

DENVER, COL., Sept. 30.

TO THE EDITOR OF THE TELEGRAPHER.

A TERRIBLE fate overtook a telegraph operator this afternoon, and the details are sent for publication in "our organ," THE TELEGRAPHER, in order that the friends of the deceased may receive notice of his fate, should it not be practicable to communicate with them directly.

About four o'clock this afternoon a fire occurred at Hugo, Colorado, burning several small buildings belonging to employees of this road. The buildings were of small value or account, but the saddest part of the story remains to be told. In one of the houses a telegraph operator, named G. D. Oliver, was asleep, and awoke only to find himself surrounded by the flames. He attempted, unsuccessfully, to escape, being caught by the flames and burned to death. Every effort possible was made to save him by Engineer Bloom, but without avail, the latter being compelled to retreat, and abandon Oliver to his fate, to save himself from the flames.

Mr. Oliver was a stranger in Hugo, and up to this time no one can be found who knew him, or where his relatives live, but we hope to ascertain who and where his relatives reside to-morrow. He was last employed on the Denver and Rio Grande Railroad.

Another sudden death occurred on our line on Wednesday, September 20, at Kit Carson, Colorado. The operator, Mr. George E. Higdon, of Indiana, who died, has been employed at Kit Carson by this company (the Kansas Pacific Railway) for some time, and was highly esteemed by his employers and every one who knew him. His death was caused by heart disease. He was apparently as well as usual on retiring at night, but he was found in the morning by the watchman dead. His remains were sent East to his friends.

Q.

Telegraphic light.—Electric gas lighting.

A New Railroad Telegraph Line.

OREGON STATION, ILL., Oct. 2.

TO THE EDITOR OF THE TELEGRAPHER.

As you have frequently requested communications covering anything of interest telegraphically that may be occurring, I avail myself of your courtesy to introduce our (comparatively) short line and its operators to the notice of the fraternity generally.

Ours is a new line, constructed, owned and operated by the Chicago and Iowa Railroad Company. It extends from Forreston to Aurora, Illinois, a distance of 82 miles, but has quite a number of offices for a line of its length. As was to be expected, most of us operators are heavy *plugs*, but we have two or three good operators among us, and the rest are willing and anxious to improve themselves until they are entitled to rank with their older and more experienced *confreres*.

The following is the *personnel* of the line: The veteran Henry Hough presides at Forreston during the day, and kindly receives what business we offer for points West and North, while Mr. F. D. Sweet officiates at the same office during the silent watches of the night.

Mr. A. W. Brayton has charge of the Mount Morris during the day, and when the shades of night descend upon the earth he is relieved by Mr. Stover.

Mr. George W. Cuts takes charge of Oregon Station as well as of the telegraph, assisted by Mr. C. E. Kibbly at night.

Mr. Robson, from Aurora Yard, runs Chana.

Mr. George Fields, formerly of the C. B. and Q. R. R., has charge of the office at Rochester, with Mr. W. H. Yearnshaw, who succeeds Mr. Murphy, for night duty, the latter having left the road, and followed the injunction of the Democratic candidate for the Presidency, and gone West.

Mr. Lewis is at Steward now, as agent and operator. We have one lady operator on the line at Shabbona, who, I am sorry to say, for the credit of her fellow-operators, does not always experience the politeness that she should.

Mr. Howell presides at Waterman in the capacity of agent and operator, and Mr. G. W. Mitchell relieves him at seven o'clock each evening.

Hinkley Station is controlled jointly by Messrs. E. F. Winslow and O. M. Hinkley, the latter gentleman having been formerly of the Illinois Central line.

Mr. Smith officiates at Blount Station as agent and operator.

Our train despatching is done by the despatchers of the C. B. and Q. at Aurora, some of whom are very gentlemanly and obliging. Among others, special mention deserves to be made of Mr. Conklin, formerly of the Erie railroad. He is certainly one of the most obliging and accommodating despatchers that it has been my good fortune to meet during the eight years of my life spent in the railroad service.

Mr. W. H. Mixer is our efficient superintendent of telegraph, and is a duplicate of Mr. Conklin, except in size, not yet having attained to an avoirdupois of 300 pounds, as has the latter gentleman. C.

Personals.

Mr. F. E. GREEN has been appointed operator at Richland, Missouri, office of the Atlantic and Pacific Company.

Mr. J. G. MEYERHOEFER, late operator at New Chicago, Kansas, M. K. and T. R. R., has been appointed agent and operator at Neosho Falls, Kansas, same road.

Mr. T. MEYERHOEFER, manager W. U. Telegraph, Springfield, Mo., has leave of absence for a few weeks, and will take a trip East. The vacancy will be filled by Mr. W. E. MANZEY until Mr. MEYERHOEFER's return.

Miss CLARK, formerly of the W. U. Wabash avenue office, has accepted a situation with the Pacific & Atlantic Co., Chicago.

Mr. E. B. LUDLOW has resigned his situation on the W. U. Chicago night force, to accept the position of night manager A. & P. Telegraph Co., same city.

Mr. J. W. PUTNAM, of the W. U. night force, Chicago, has resigned, to accept a situation on the C. B. & Q. R. R.

Mr. E. J. STEVENSON, after an absence of several months, has returned to Chicago, and accepted a situation on the W. U. night staff.

Mr. N. C. GRISWOLD has returned to Chicago, after "subbing it" with the A. & P., at Cleveland, for five months, and accepted a situation on the W. U. day force.

Mr. J. R. LE VALLEY has been transferred from the day to the night force W. U. Chicago main office.

Mr. H. TATGE has been promoted from the day staff Metropolitan City Telegraph lines to the day force W. U. main office, Chicago.

Mr. F. W. BENSON has been transferred from night to day force W. U. main office, Chicago.

Messrs. A. J. MEERENESS and WM. EARNSHAUSEN have accepted situations on the W. U. Chicago night force.

Mr. D. S. FOOTE has resigned his situation with the Western Union Co. at Chicago, Ill., to engage in other business.

Mr. F. B. KNIGHT, of the W. U. day force at Chicago, Ill., has resigned and gone East.

Mr. GUS CARROLL, having recovered his health, has accepted a situation on the W. U. Chicago day staff.

Mr. E. O. WAIT has resigned his situation on the W. U. Chicago night staff, to accept the management of the same company's office at Clinton, Iowa.

Miss EMMA STANTON, after an absence of a year and a half, has returned to Chicago, and accepted a situation with the W. U. Co. in their main office.

The Telegraph.

Annual Election of the Western Union Telegraph Company.

THE annual meeting of the Western Union Telegraph Company was held at the executive offices of the company, No. 145 Broadway, in this city, on Wednesday, October 9. The following directors were elected to serve for the ensuing year:

William Orton, James H. Banker, Horace F. Clark, Alonzo B. Cornell, Harrison Durkee, Augustus W. Greenleaf, Edwin D. Morgan, O. H. Palmer, Augustus Schell, John Stewart, E. B. Wesley, Hugh Allan, Nathan A. Baldwin, William D. Bishop, Ezra Cornell, William E. Dodge, Sheppard Gandy, Norvin Green, John A. Griswold, Wilson G. Hunt, George Jones, C. Livingston, E. S. Sanford, Hiram Sibley, Z. G. Simmons, Moses Taylor, Daniel Torrance, George Walker, Stillman Witt.

Inspectors of Election—George B. Prescott, Leonard Cox, William Arnoux.

The election was unanimous, and the Board is precisely the same as that of last year. The Secretary presented a report for the past year showing the company to be in a very flourishing condition, although no dividends will be made for some time yet, in accordance with the policy adopted three years ago.

We shall publish the details in full next week.

A New Telegraph Company and Line.

A NEW telegraph company has lately been organized to build a line between the principal points in Washington Territory, under the name of the Puget Sound Telegraph Company. The following statement in regard to the line, from the Portland, Oregon, *Daily Bulletin*, will be found of interest:

"The Puget Sound Telegraph Company have now cleared the whole distance between Port Townsend and Port Blakely for the erection of their telegraph poles and wire, which are being put up rapidly. There will be two cables used on this route—one across Hood's Canal, and the other from Port Blakely to a point near Alki Point. It is expected that the line will be in complete working order between Seattle and Port Townsend, and all intermediate ports, within the next two months."

Foreign Telegraphic Notes.

THREE Chinese have taken out a patent at Paris for the invention of a new automatic and autographic continuous telegraphic instrument, by the aid of which apparatus the dispatch is transmitted to the receiver as an exact *fac-simile* of the transmitter's autograph.

For the week ending September 14th, 1872, the total number of messages forwarded from postal telegraph stations in the United Kingdom was 327,202, an increase over the corresponding week of the previous year of 60,256.

The Trans-Caucasus Provinces being only connected with the telegraph system of Russia in Europe by the single route of Tiflis and Stavropol, and, moreover, the communication being frequently interrupted, orders have been given by the Russian Government to lay down a second line of telegraph to those distant parts through Astrachan and Kisliar.

The Captain-General of Porto Rico has dismissed Mr. Morris, the cable electrician, from the service, because he is also editor of the *Boletín*, an organ of the ultras, and because he wrote against the radicals and criticised the Captain-General.

The Brazilian Government have granted to Baron de Maua the concession of laying and working a submarine telegraph cable between Brazil and Portugal. The concession is exclusive for twenty years, and stipulates that the undertaking shall be carried out conjointly with the Telegraph Construction and Maintenance and the Falmouth & Gibraltar Telegraph companies, to whom the Portuguese Government have granted a corresponding concession.

The total number of telegraph messages forwarded from postal telegraph stations in the United Kingdom, for the week ended September 21st, 1872, was 321,478, an increase of 65,022 on the corresponding week of last year.

The Turkish Embassy at Berlin gives notice that several telegrams with false signatures having been sent off from some of the telegraph offices at Constantinople to bankers at Paris and London, he is authorized to offer a reward of 500 gold medjidjees to whoever shall produce such evidence that the offenders be convicted and punished; and if the informer is one of the perpetrators of the fraud he is promised a free pardon.

Telegraphic and Electrical Brevities.

A CURIOUS fact in electrical science is illustrated in the manufacture of a certain grade of paper. The paper, just after passing the hot calender rolls, develops frictional electricity to such an extent that a person can, by touching a gas burner with one hand and the paper with the other, ignite the gas by the passage of the current through the body.

The Western Union Telegraph Company has extended its Pacific lines to the Meadow Valley mining district, and, on Friday of last week, opened an office at Pioche, the chief town of the locality, situated 120 miles south of White Pine.

All three of the Atlantic telegraph cables are now in working order. It is to be hoped that the icebergs will not trouble them this winter.

Recognizing an Operator by his Handling of the Key.

ONE of the most remarkable illustrations of the power which a telegraph operator acquires to distinguish individuals by their touch upon the instrument has just been afforded by Mr. Hempstead, one of the operators in the Western Union Telegraph Company's office at Hartford. About a fortnight ago, Mike W. Sherman, formerly a telegraph operator in Hartford, escaped from the Middletown insane asylum, where he has been confined, and, though thorough search was made for him, he successfully eluded the people who were on his track until Monday night. While Hempstead was at work in the Hartford office that night he suddenly recognised, among the clatter of a score of messages passing over the wire, a sound which he at once declared was the touch of the missing Mike. It proved to be a message from Wallingford, and an investigation showed the Hartford operator was quite right in ascribing it to the insane man, who was found there yesterday, he having dropped into the office in the former place Monday night, and taken a hand at his old business.

Miscellaneous.

THE CONNECTION BETWEEN MAGNETIC STORMS AND SOLAR ERUPTIONS.—The recent violent solar eruptions, observed by Father Secchi on the 8th and 13th of August, were coincident with violent magnetic disturbances in the British postal telegraph lines. These coincidences have been before observed, and, notably on the 1st September, 1859, when Mr. Carrington, who was watching a large spot on the sun, suddenly observed at 11 h. 20 m. A. M. a bright spot appear in the middle of a dark one; this appearance lasted for about ten minutes, and a corresponding disturbance in time and duration was indicated by the self-registering magnetometers at Kew. It would appear, then, that there is an indisputable connection between the two phenomena. It remains, however, yet to be proved whether the one phenomenon is the direct or indirect cause of the other.

ECONOMIC ELECTRIC PILE.—M. Gaiffe has recently introduced to notice a new electric pile, devised by him with a special view to its universal cheap production; it resembles in form Callaud's cell, which has been employed for some years on telegraph lines, but the elements are different. The poles are rods of lead and zinc, immersed in a ten per cent. aqueous solution of ammoniacal chloride, contained in a suitable vessel; the zinc rod is only half the whole depth, whereas the lead rod reaches to the bottom, where there is a layer of saline oxide of lead (minimum). The electro-motive power of this pile is about one third that of a Bunsen couple. Its internal resistance is small and little variable, as the chloride of zinc found does not sensibly change the conductivity of the exciting liquid; its constancy is great; and, finally, the cost is merely nominal when the circuit is open.

The Patent for the Callaud Battery.

AN item having appeared in a recent number of THE TELEGRAPHER, stating that the patent issued to JEAN ARMAND CALLAUD for his galvanic battery had expired, the attention of all parties interested is called to the communication of M. CALLAUD's attorney, Mr. HENRY R. DAVID, stating the facts relative to the patents, showing that they are still in force, and are to be enforced against all infringers.

Office Wire.

THE advertisement of Mr. EUGENE F. PHILLIPS, of Providence, R. I., manufacturer of telegraph office wire of all descriptions, which appears in this paper, will be found of interest and value to all who have occasion to purchase and use this kind of wire. We are assured that the wire furnished by Mr. PHILLIPS is of a superior quality, and that his terms are very reasonable.

Some business men profess to believe that advertising is of no advantage to them. This is a mistake. Judicious advertising pays better than any other investment a business man can make.

Wanted to Purchase, Back Numbers of The Telegrapher.

A GENTLEMAN desires to purchase the following numbers of previous volumes of THE TELEGRAPHER, to complete his files:

Volume 1—No. 5.

Volume 3—Nos. 48 and 50.

Volume 4—No. 95.

Fifty cents each will be paid for these numbers, or either of them, if forwarded to this office.

Close of the Cincinnati Industrial Exposition.

THE Cincinnati Industrial Exposition closed on Saturday evening last, Oct. 5. This has been the most successful exhibition of the kind ever held in this country. The total receipts amounted to \$100,000. No labor or expense was spared to make it what it proved to be—the superior of any similar enterprise ever undertaken in the United States.

The arrangements for the Exposition of 1873 have already been commenced, and have made considerable progress. A guarantee fund of \$125,000 has already been subscribed, and it is proposed to increase this to \$500,000.

The following are the awards of premiums to electrical and telegraphic instruments and apparatus. Judges—W. W. SMITH, HENRY TWITCHELL, JOSEPH M. LOCKE:

Best telegraphic instrument for private use, silver medal to Merchants' Manufacturing and Construction Company, New York city; Ed. C. Armstrong, agent, Cincinnati.

Greatest improvements in telegraphy, silver medal to STEARN'S Duplex, entered by Western Union Telegraph Company.

Best burglar alarm telegraph, bronze medal to HOLMES' Burglar Alarm; H. D. Rogers, agent, Cincinnati.

Best electric gas lighter, silver medal, Electric Gas Lighting Company, New York city.

Best system railroad signals, silver medal, F. L. Pope & Co., New York city; Ed. C. Armstrong, agent, Cincinnati.

The award for the best telegraphic instrument for private use is to the SELDEN printer, of which a considerable number have already been sold by Mr. SAMUEL J. BURRELL, of this city, who has recently transferred the business to the Merchants' Manufacturing and Construction Company.

The award for railroad signals is for an entirely new, and in every respect superior, and the only reliable system of signals, now being introduced by this firm, and which are destined to practically supersede all others and be brought into general use. These signals are fully covered by patents in this country and abroad.

The October Magazines.

THE AMERICAN JOURNAL OF SCIENCE AND ARTS.

THE October number of this the leading scientific publication of the country is upon our table, and is, as usual, well filled with valuable, interesting and instructive scientific articles from well known scientists. The department devoted to scientific intelligence is of great interest, and is brought down to the date of publication.

Published by DANA & SILLIMAN, editors and proprietors, New Haven, Conn.

THE PHRENOLOGICAL JOURNAL.

The October number of the *Phrenological Journal* is before us. In its special department it has no competition, and is unrivalled for the variety and amount of information which it conveys. The present number contains a portrait of the late Dr. LOWELL MASON, with a phrenological analysis of his character, and brief biography. It contains, also, articles on the Japanese in America, with portraits; Children's Rights; Water, Pure and Impure, etc.; besides several short sketches and stories, interesting and instructive. In addition to the portraits there is the usual variety of illustrations. Published by S. R. WELLS, 389 Broadway, New York.

THE following is not bad in its way: *Scene*—A metropolitan hotel telegraph office, early Monday morning.—Young gentleman operator, after repeated calls for young lady operator in a branch office, at last gets a response, and then, "click, click, click" (fortissimo), he telegraphs back to her vehemently, "I have been trying to catch you for the last half hour." In a moment the following spicy reply came tripping back to him over the wires from the telegraphic suburban maiden: "Pooh! that's nothing; there is a young man here who has been trying to do the same thing for the last two years, and he hasn't caught me yet."

New Patents.

For the week ending August 27, and bearing that date.

No. 130,795.—ELECTRO-MAGNET. Thomas A. Edison, Newark, N. J.

"Balancing poles;" continuations of magnet cores, acting on the armature, neutralize residual magnetism, so that the armature is promptly released.

The balancing poles k, energized by induced magnetism from the cores f of the electro-magnet, and acting in opposite direction to such electro-magnet, substantially as set forth.

No. 130,810.—COMPOSITION FOR CHEMICAL TELEGRAPH PAPER. George Little, Rutherford Park, N. J.

Water, chloride sodium, ferro-cyanide potassium, chromic acid and chloride calcium.

The composition, herein specified, for preparing chemical paper for telegraphic purposes.

No. 130,811.—TELEGRAPH APPARATUS. George Little, Rutherford Park, N. J.

Places electro-magnets within rheostat. Two series of electro-magnets are wound upon same core, one being in main and one in constant local circuit, the latter replacing the retractile spring commonly used.

1. A soft iron core and two helices, one in the main line and the other in a local constant circuit, and arranged, as set forth, to produce opposite polarity in the core, in combination with an armature that is polarized, for the purposes and substantially as set forth.

2. An electro-magnet introduced within a rheostat, substantially as set forth.

3. The rheostat in the main line and the rheostat in the local constant circuit, in combination with the electro-magnets and polarized armature, substantially as set forth.

No. 130,813.—INDICATOR FOR TELEGRAPH CIRCUITS. George Little, Rutherford Park, N. J.

The operator, by the finger key call, or by the transmitter, can communicate with the distant station, and, by the instrument I, learn that connections are complete at the receiving station. If, during the transmission of the message, the indication at I is interrupted, the transmission can be stopped and the defect removed.

The movable mirror m upon the yoke n, in combination with the galvanometer, as and for the purposes set forth.

No. 130,855.—MAGNETO-ELECTRIC DIAL TELEGRAPH. John B. Johnson and Harrison Whittemore, Boston, Mass.

Transmitting keys and receiving dials on sloping top; top secured to base by springs and hooks, to which the terminal wires of the circuits are attached, so that top may be removed without breaking wires, the circuits being automatically restored when cover is replaced.

1. The stop keys G' and cover A, in combination with bent lever H H', spring g, and frame f of the transmitter, when constructed to operate substantially in the manner as and for the purposes set forth.

2. The hooks E E' and springs F F', in combination with cover A, base W, receiver D, and call bells Q Q', substantially in the manner as and for the purposes set forth.

3. The combination, with a magneto-electric dial telegraph, of a sloping circle of keys, B, arranged radially around a corresponding sloping alphabetical dial, C.

Died.

BERRY.—At New Orleans, La., Oct. 6th, of diphtheria, DANIEL TRANT BERRY, of Racine, Wis., after a residence at that place, in the employ of the Western Union Company, of one month.

Mr. BERRY was widely known among telegraphers, having been many years in the profession. He was an honorable man, one of the most genial of companions and a steadfast friend.

HIGDON.—At Kit Carson, Colorado, Wednesday, Sept. 20, suddenly, of heart disease, Mr. GEORGE E. HIGDON, formerly of Indiana, an operator of the Kansas Pacific Railway Telegraph. His remains were sent East to his friends.

OLIVER.—At Hugo, Colorado, Sept. 30, burned to death accidentally, Mr. G. D. OLIVER, formerly an operator on the Denver and Rio Grande R. R. Telegraph.

RANDALL.—At Ann Arbor, Michigan, September 13th, after four months' illness of inflammation of the bowels, FRED. A. RANDALL, aged 21 years and 6 months.

Obituary.

FRED. A. RANDALL.

THE deceased was a member of the Telegraphers' Mutual Life Insurance Association. He learned the telegraphic art at Ann Arbor, Michigan, six years ago, in the office of the Western Union Telegraph Company. He was first employed on the telegraph lines of the Michigan Central Railroad as an extra operator, which position he held to the satisfaction of his employers for three years. He then entered the Western Union Telegraph office at Jackson, Michigan, where he remained one year, when he was offered and accepted a situation with the same company under the management of Mr. Doolittle, at Lafayette, Indiana.

After serving in that office one year he came to Chicago, Ill., and accepted a situation with the same company on the night force of the Chicago office. His worth was soon discovered, as he was an operator of more than ordinary ability, not only as a manipulator of the key, but as an electrician, and he was promoted to a position on the day force, where he worked some of the best wires in the office. In the nine months that he was in actual service here he made friends of all with whom he was brought in contact.

As a companion and a brother operator he was all that could be desired, his conversation showing at all times his genial warm-hearted nature; no unkind or insinuating remarks were ever heard from his lips. As a son he was the personification of dutiful affections; as a brother his devotion was unbounded, his love of home and domestic society causing his early death to be the more keenly felt. May we who survive him cherish his many virtues and profit by his manly example.

About the latter part of last May he was taken sick, and after a few days was confined to his bed, where he lay, a patient, uncomplaining sufferer for three months. In the latter part of July he appeared to be convalescent, and we began to speculate about how soon we might expect him to take his accustomed place among us. His physicians and friends thinking a change of climate would be beneficial to him, he was removed from his brother's residence in Chicago to his home at Ann Arbor the first of August. For a few days the change seemed to be beneficial, but he experienced a sudden relapse, and notwithstanding the best medical aid, and all that kind and loving friends could do to save him, his race on earth was run, and on the 13th of September he answered the final summons, which sooner or later must come to us all.

His remains have for the present been placed in a tomb, until a suitable lot can be procured for their final resting place. No formal demonstration has been made by the fraternity in Chicago on the occasion of his death, as it has not been customary so to do. The matter was, however, warmly discussed, and it has been decided that hereafter we will not be behind other cities in exhibiting to the fraternity at large our deep bereavement over the loss of our fellow craftsmen.

CHICAGO, ILL.

Journal of the Telegraph, please copy.

L.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, OCTOBER 12, 1872.

Premiums and Commissions.

We have decided to make a slight change in the terms of subscription for THE TELEGRAPHER. For the future the "Club terms" are done away with. But few subscriptions are now made in this way, and the club system is more trouble and annoyance to us, our agents and subscribers, than it amounts to. Single subscriptions will remain as before, at \$2 per year, payable in advance.

We shall not at present offer any long premium list, but will make the following premium propositions: For four subscriptions to THE TELEGRAPHER, at the regular subscription price for one year, we will send a copy of the paper free to the person sending us the subscriptions.

For ten new subscribers we will give, as a premium, PICKETT's Memorial Bust of Prof. S. F. B. MORSE. This bust is what is termed cabinet size, and is finished after the style of the celebrated ROGER's groups, and is a superior work of art.

To those who may interest themselves in procuring subscriptions we will allow, in lieu of the above, for new subscribers, 20 per cent. upon the amount collected, which may be retained in cash, or we will send any books or instruments that may be desired for the amount of commission as a premium.

We trust that these propositions will meet with approval, and that the friends of the telegraphers' organ will at once use their best exertions to secure a handsome addition to our subscription list.

The Government and the Telegraph.

We are in receipt of advices from Washington that, at the approaching session of Congress, a renewed and vigorous attempt is to be made to obtain some decisive action in favor of the assumption by the Post-office Department of the control and management of the telegraphs of the United States. It has become a pet project of the present Postmaster-General, and as it has been endorsed by President GRANT, it may in some measure be regarded as an administration measure. A change of administration would, no doubt, prevent any earnest or energetic effort to forestall the action of a new Congress on this subject; but, as there is the utmost confidence in administrative circles of the perpetuation of the present administration for another term, preparations are being made to proceed at once to press it upon Congress.

Mr. ROBERT B. LINES, formerly private secretary of General WASHBURN at the time he was urging the matter upon Congress, is now the private secretary of the Postmaster-General, and is engaged in getting up the statistics and collating the information upon which Mr. CRESSWELL will base his argument in his annual report in favor of the postal telegraph. It is understood that a Government telegraph monopoly, pure and simple, is contemplated, and that the hybrid scheme which has been so long and persistently urged by Mr. GARDNER HUBBARD is not now in favor at headquarters. Mr. LINES has always opposed the HUBBARD scheme, and, it will be remembered, appeared before the House Committee on Appropriations at the last session, in opposition to it, and in advocacy of the postal telegraph as proposed by Mr. CRESSWELL.

The argument relied upon principally to carry the project through, notwithstanding the heavy drain it will make upon the national treasury, is the success of the postal telegraph experiment in Great Britain. It will be urged that if it can be made to pay there the result in this country is not doubtful. We have heretofore shown the error which invalidates this argument. The conditions of the two countries are so different that the result in one cannot be taken as an indication of the probable result in the other. In fact, the experience of this country in the matter of cheap postage rates demonstrates its fallacy. In Great Britain the revenues of the Post-office from postage show a large annual profit, while in the United States, with rates fifty per cent. higher, there is an annual deficit of millions of dollars, and no probability of the Post-office Depart-

ment, even without new burdens, paying its way for years to come. Were the telegraphs of the country added to its present business the deficit would be at least double, in addition to the interest on the forty millions of dollars of bonds that would be required to retire existing telegraph interests.

It would, no doubt, be a very pleasant thing for the Post-office officials to have the telegraph as well as the mails confided to the management of the Department. It would add greatly to the importance of that department of the Government, increase by tens of thousands the number of Government officials, and place under Government and partisan control a very important branch of business. It would, however, be a most dangerous matter for the country, and would largely impair the value of the telegraph in future political contests. It would not be as efficiently managed by Government as it is by private enterprise, to say nothing of the injustice of taxing those who do not use the telegraph, or who use it but very little, to pay for those who use it constantly and largely.

Notwithstanding the strenuous and persistent efforts which have been made to popularise the idea of a Government management of the telegraph, there is no popular demand for it. The good sense of the people is opposed to any such interference in so important an interest; and whatever may be the defects of the system now, it is better to await their gradual correction through private competition than, by a Government monopoly, arrest progress and incur the evils which, in this country at least, are inseparable from official interference.

In seeking to establish a monopoly of the telegraph business of the country by an enforcement of the PAGE patent, the Western Union Telegraph Company are coöperating with the postal telegraph advocates, and furnishing them with an additional element of popularity for their scheme; for it is unquestionably true that the people will not consent to a private telegraph monopoly. We trust, however, that nobody will be induced to favor a Government telegraph on this ground. That patent, as applied to telegraphy, is worthless, and will be so decided by the Courts, should it ever come up for final judicial adjudication.

We hope, therefore, to see such a vigorous opposition to the schemes of Postmaster-General CRESSWELL and Mr. HUBBARD developed this winter as shall put them out of sight for years to come. Both schemes are full of evil and mischief, and must be contested to the last before Congress and the people.

An Electrical Resurrectionist.

THE readers of the official organ of the Western Union Telegraph Company must have been pleased, not to say charmed, at the liberal manner in which a certain species of literature has lately been dealt out to them which may be fittingly characterized as scientific cold victuals. Take, for instance, the last number of that entertaining periodical. The first page and half the second are occupied by two rather indifferent translations. The first one, from DU MONCEL's work on the electric telegraph, is a description of WHERATSTONE's rheostat, an antiquated apparatus for measuring resistances, utterly superseded years and years ago by the more convenient and accurate resistance scales now employed. It is of no possible use to the telegrapher of the present day, except as a matter of historical interest. Next we have a translation from GAVARRET's *Telegraphie Electrique* on electro-magnets, which contains nothing that cannot be found in all the text books for the last ten years. This is followed by a chapter on induced currents, which is not only very old but a little stale, having been, as it were, warmed over twice; that is to say, it was copied, without credit, from PRESCOTT's work on the telegraph, who, in turn, copied it *verbatim* from DE LA RIVE's treatise on electricity. Then we have one column from CLARK and SABINE's work on electrical units of resistance, and another on the threadbare and obsolete subject of the two fluids *vs.* the one fluid hypothesis of electricity, which has a very familiar tone, although we cannot just now recollect where we read it. Besides this, there is the best part of a column of anecdotes from PRESCOTT's work which ought to be tolerably familiar to the public by this time, as they have periodically gone the rounds of the country press ever since that work was issued, twelve years ago.

All this matter is printed as original, probably on the same theory as that of the school-boy who insisted that his composition was original because it said so over it in the paper he copied it from!

The absence of the editor of the official organ on his vacation may account for the superabundance of this peculiar style of electrical literature in the current number, but it is evident that his substitute either considered anything good enough for the readers of an organ furnished gratuitously, or has a very low estimate of their average familiarity with electrical science in its earlier stages of development. As the eminent electricians, whose productions have been appropriated without the credit usually accorded in respectable publications, have since made very great advances in electrical science, they will probably not feel very much aggrieved at the omission of the usual courtesy which is characteristic of the official organ of the Western Union Telegraph Company. Certainly, no other publication which pretends to supply scientific matter would cumber its columns with such antediluvian emanations.

Literature.

A Manual of Military Telegraphy for the Signal Service of the United States. Washington, 1872.

THIS little volume of 100 pages has been prepared for the purpose of furnishing to the officers of the United States army such information as will enable them to establish and maintain telegraphic communication between forces in the field or points covered by military operations. The author of the work has also given sufficient elementary information to enable the student to understand the principles on which depends the work he has to perform, without going into the technicalities and higher branches of the art any farther than necessity requires. Wherever necessary or desirable, reference is made to the leading standard works on electricity and telegraphy.

A large portion of the work is devoted to the construction of telegraph lines, including both permanent and temporary, or field lines.

It contains a far greater amount of useful information and instruction upon the subject of building telegraph lines than any book hitherto published in the English language. The elaborate German work of ROTHER is the only one which can be compared to it in this respect. All the details of the best approved methods of constructing lines, organization of the working force, etc., are given at length. The method prescribed for the construction of field lines may, perhaps, be of interest to our readers. The supports, technically termed "lances," are composed of some light and elastic wood, such as well seasoned spruce or cypress, about seventeen feet long, two and a half inches diameter at the butt, and one and a half at the top—the butt tapering to a blunt point, and the top secured by a sheet iron ferrule three inches in length. As such a support weighs only eleven pounds it is possible to carry 250 of them, with insulation and tools for the erection of ten miles of line, on a single four-horse truck. A peculiarly shaped insulator of hard rubber is generally used for these lines. The most approved conductor is No. 15 iron wire. The battery used on the field lines is an ingenious adaptation of the Daniell, or, more properly, of the Calland. It consists of a wooden trough, divided into cells by wooden partitions, the whole being rendered non-conducting and impervious to water by saturation with paraffin; a thin copper plate near the bottom of each cell, having underneath it a layer a quarter of an inch thick, and above it a layer of three quarters of an inch thick of crystals of sulphate of copper; a sponge, saturated with water, and filling the cell to within an inch of the top, upon the upper surface of which is sprinkled sulphate of zinc; and lastly, a zinc plate, which rests upon the sponge. The cells are five inches in length, breadth and depth. The copper plates are four and three quarter inches square, and the zinc plates four and a half inches square and one inch in thickness, and provided with thumb screws for connecting with the insulated wire from the copper of the adjoining element. The cover of the box or trough is hinged, and when closed it is secured by hasps and staples. When closed it presses firmly upon the zinc plates and prevents any displacement of the parts of the battery.

We have only one criticism to make on this book, and that is, that if the constructor follows the method shown in the cut on page 16 of putting up the Brooks insulator, the beneficial results usually supposed to result from its use will hardly be realized. The printer, or else the printer's d—l has taken the liberty to put it upside down.

We do not know who the author of this little manual is, but he has done his work thoroughly well, and deserves great credit. The matter is almost entirely original—a praiseworthy feature in telegraphic books, most of which are copied, one from another, errors and all. We would be glad to see our leading telegraph company get up a sensible little manual of this kind for the use of their constructors and line men. It would be in many respects a most profitable investment.

"Why do the heathen rage?" For particulars see the official organ.

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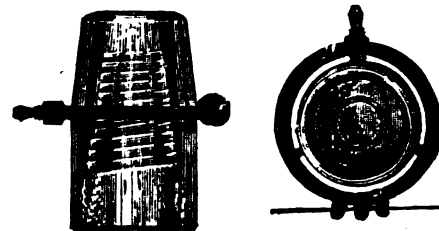
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4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

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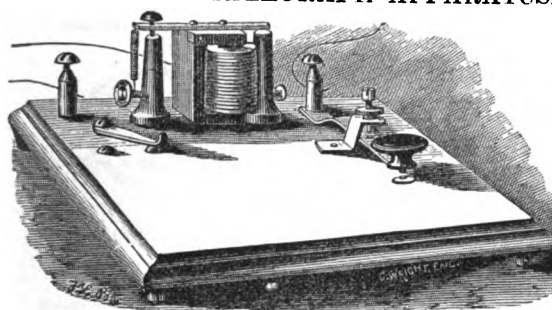
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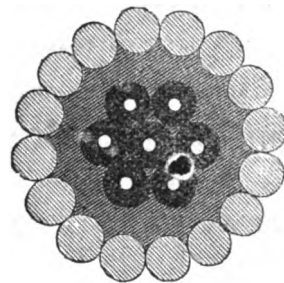
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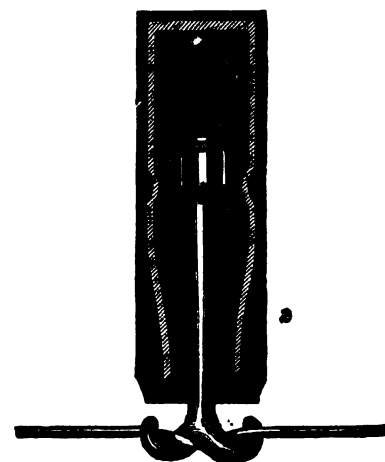
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Vol. VIII.—No. 61.

New York, Saturday, October 19, 1872.

Whole No. 327

On a New Telegraph Wire Gauge.

BY H. MALLOCK AND W. H. PREECE.

IN purchasing iron wire it has hitherto been the invariable custom to specify its size according to the Birmingham Gauge. This wire gauge varies with every manufacturer, and there is not only no standard from which he can correct his own, but no one is aware on what basis the gauge was originally made, so that it is impossible to reproduce it in any correct shape. Mr. Culley, in a note to table (No. 9) in his hand-book, says, "Birmingham Wire Gauge.—The diameters of the several gauges must be considered approximate only. There is no authorized standard, and the sizes of different makers vary considerably."

Mr. Latimer Clark's paper, read before the British Association in September, 1867, so well describes the variations of different makers that it is useless to bring forth any further proof of its inconsistency and its self-evident inconvenience. It is evident that, in establishing any gauge, it should have been coherent throughout; it should have been based on a regular increasing series, and should have started from some recognized and well known unit. Mr. Latimer Clark has pointed out the probability that the present Birmingham Wire Gauge originated from No. 16 Bell Wire as unit, that wire being 1-16th of an inch in diameter; but this is a mere arbitrary size to select, and although it may be understood that before telegraphs were in existence bell-hangers would start from a size most convenient to them, that size bears no relation to any telegraphic purpose, and it bears no relation whatever to the remainder of the series.

Mr. Whitworth suggested that we should adopt the decimal part of an inch as the unit, and establish a gauge based upon regular increments of size in thousandths of an inch; but this again bears no direct relation to the weight and resistance of the wire—two points which are of paramount importance in dealing with wire for electrical purposes.

Mr. Latimer Clark proposed to establish a gauge starting from the No. 16 wire as a unit, and increasing or decreasing by regular increments or decrements of 25 per cent. of the circular area or weight of the wire. But this system again has no relation to the physical qualities of the wire and cannot be said to be *absolute*. We want a system based upon the fundamental units of measurement, either of mass or of length.

The question, therefore, arises whether, in establishing a uniform and coherent gauge for iron wire, it should be based upon weight or upon diameter.

In favor of a gauge based upon weight it must be remembered that we already purchase wire from the manufacturers, transport it, pay for its transport, and distribute it along the lines upon which it is intended to be erected, by weight.

Its breaking strain is in direct proportion to its weight. Its capacity for the transmission of messages depends upon its resistance, which varies with the square of its diameter, and therefore with its weight; and we test and regulate our circuits in terms of resistance (that is weight), and not in terms of diameters, or the square roots of weight.

Finally, as weight is invariable in all temperatures and latitudes, a size dependent upon a number of pounds per mile will be constant as long as pounds and miles exist; and by adopting these units as a basis, we have a ready means of correcting our gauge at all times.

Weight of wire at once gives us an idea of its resistance, and in the case of stranded wire this information is essential; for otherwise, even when the diameters of each separate wire is taken, an approximate correction has to be made for the lay of the strand.

On the other hand, it must be noted that the adoption of a system dependent upon weight necessitates a separate gauge for wire of each metal, whereas a gauge of diameters would do for wire of all metals. We are not aware of any inconvenience that is likely to arise from this cause. The measurement by diameters must still remain for ordinary use, whatever species of gauge be used, and resistance in absolute units already gives us a system which connects together all wires, however they may be gauged, purchased or used. Yet the practice at present is invariably to specify and to purchase copper wire for cables by weight, and the application of the Birmingham

wire gauge to the dimensions of copper wire is rapidly falling into disuse, and copper wire is either designated by its weight per knot or by its diameter in thousandths of an inch—and there is, therefore, a precedent for adopting the same system for iron wire.

It may be said that the verification of wires purchased by weight is more difficult than that purchased by a decimal gauge, but there can be no mistake about its being more accurate, for, when measuring the diameter of a wire in thousandths of an inch, but one or two minute places are measured, and from rough galvanizing or other such cause an error can be easily made, whereas in weighing the 1-1000th part of a mile (or other convenient length) the average weight of the whole will be much more correctly approximated.

On the other hand, in favor of a gauge dependent on diameter, it is evident that one gauge will do for any material used for wire, either for land lines, submarine cables, resistances, or apparatus.

Again, the gauge by weight is a difficult thing to test or verify anywhere except in stores, whereas any one can carry in his pocket a wire gauge to verify the dimensions. On the other hand, dimensions check weight, and it would be very convenient to be able to tell at once the weight of wire by merely taking its diameter. This can be done at present, but only by the use of coefficients which are difficult to remember.

It appears, therefore, upon the careful consideration of all these reasons for and against adopting a gauge dependent upon the weight, that those in favor of such a system are insurmountable.

It therefore remains to determine from what unit we shall start to establish a gauge dependent on weight. The pound is evidently the natural unit, but iron wire weighing one pound per mile is smaller than anything used for telegraphic purposes, and if we only increased by increments of a pound, the numbers of wires would become too numerous. We must, therefore, find some multiple of this natural unit that will give us a series approaching the sizes of the wires at present in use as closely as possible.

It has been mentioned above that Mr. Latimer Clark proposed to adopt No. 16 Bell Wire as a unit to start from, and by regular increments and decrements of 25 per cent. to the weight of this wire, to establish a series which would be found to approximate very closely to the Birmingham Wire Gauges at present in use, and which might be substituted for them without much inconvenience. We find, however, that by taking 25 times the natural unit, or 25 lbs. weight per mile and unit, and increasing by regular increments of 25 lbs., we establish a regular ascending series, much more closely approaching the average wire gauge at present in use than that proposed by Mr. Clark; and also, when the diameters are worked out, very closely approaching what Mr. Whitworth proposed.

Tables are annexed giving the present Birmingham Wire Gauges, according to Messrs. Johnson and Mr. Latimer Clark, and that which is proposed by us. It will be seen, on an examination of this table, that the diameters and weights vary but very little from those at present in use. While one or two of the wires more commonly employed are lightened others are increased, but by so trifling an amount that no material difference can be experienced.

It is intended, in adopting this gauge, to weigh the wire on its receipt from the makers, but to use a gauge of diameters similar to that now in use for general use on the lines. As the size would be checked by weight on purchase a trifling inaccuracy in the diameter gauge would be immaterial in practice, as with the proposed differences between the sizes one size could not be mistaken for another.

By carefully determining the resistance of a wire weighing 25 lbs. per mile at a given temperature, the resistance of any other wire, at the same temperature, is found by simply dividing that resistance by the number representing the size of the wire—that is if the nomenclature proposed in the table be adopted.

Similarly the breaking strain of No. 1 wire, weighing 25 lbs. per mile, being known, the breaking strain of any other size will be determined by multiplying its number by that breaking strain.

In many lines, both in India and in England, the wires are mixed. For instance, in India the sizes of the wire vary with the numbers on the posts as they

approach the large stations, as illustrated by the following: From Calcutta to Raneeungee the two main wires are made up nearly as follows, viz., two miles of No. 12½, weighing 150 lbs. per mile; 14 miles of No. 9½, weighing 300 lbs. per mile; 60 miles of No. 5½, weighing 600 lbs. per mile; 100 miles of No. 1 wire, weighing 1,200 lbs. per mile. A man, by the weight system, in testing knows at once that he has to look out for a resistance

$$= \{ (2 \times 8) + (14 \times 14) + (60 \times 2) + 100 \}$$

of the resistance of No. 1, whereas, had there been Nos. 8, 4 and 1, instead of using simple factors which are necessarily in his head, he would have to use broken numbers as factors. It must be noted that the Indian Telegraph Department abandoned the B. W. G. in 1864, and adopted for their lines made since that time sizes in multiples of 75 lbs. per mile.

It now remains to be determined how we shall denominate these gauges; whether we shall adhere to the present nomenclature determined by the Birmingham Wire Gauge—whereby the proposed sizes of wire will retain their present names—or whether we shall introduce a fresh series of numbers, starting from our unit 25 lbs. per mile as No. 1, and calling all others by their multiple of that number.

The latter arrangement would at once give a definite idea of the weight, and, therefore, of the resistance of any wire, without having to carry several tables in one's head. It will be seen that the tables also contain the new numbers which are proposed:

COMPARISON OF WIRE GAUGES.

B. W. G.	Proposed TELEGRAPH GAUGE.			B. W. G., according to JOHNSON.		B. W. G., according to LATIMER CLARK.		WHITWORTH'S Standard Decimal Measure.		LATIMER CLARK'S proposed GAUGES.	
	Gauge.	Wgt.	Dia.	Wgt.	Dia.	Wgt.	Dia.	Wgt.	Dia.	Wgt.	Dia.
No. 1.	48	1,200	294	1,345	300	1,210	300	...	300	...	346.5
" 2.	42	1,050	275	1,117	284	1,054	280	...	280	...	309.9
" 3.	36	900	255	928	259	909	260	...	260	...	277.2
" 4.	30	750	232	783	239	775	240	...	240	...	247.9
" 5.	27	675	220	670	220	651	220	...	220	...	221.7
" 6.	24	600	208	...	...	...	...	...	...	...	...
" 7.	21	525	195	570	203	538	200	...	200	...	193.8
" 8.	18	450	180	448	180	441	185	...	180	...	177.4
" 9.	15	375	164	376	165	389	170	...	165	...	158.7
" 10.	12	300	147	303	148	323	155	...	150	...	141.9
" 11.	10	250	134	249	134	264	140	...	135	...	126.9
" 12.	8	200	120	199	120	211	125	...	120	...	113.5
" 13.	6	150	104	164	109	163	110	...	110	...	101.5
" 14.	5	125	95	124	95	124	95	...	95	...	90.5
" 15.	4	100	85	95	83	97	85	...	85	...	80.3
" 16.	3	75	73	72	72	76	75	...	70	...	72.6
" 17.	2	50	60	58	55	57	55	...	50	...	65.0
" 18.	...	...	...	44	50	46	48	...	40	...	58.1
" 19.	...	...	...	34	50	33	49	...	50	...	52.0
" 20.	1	25	42	27	45	24	42	...	40	...	46.5

The diameters are given in thousandths of an inch.

N. B.—Should experience demand an intermediate size between 25 and 50 lbs., a size called 1½, weighing 37½ lbs. per mile, would supply the want; numbers 60, 80 and 100 would also give the large sizes for cable making.

"Nothing Like Leather."

THE scientific explanations one hears in the streets are sometimes worthy of being recorded—not for their scientific value but for their originality. Chancing to be at Smith's Island a few evenings ago, we noticed an itinerant professor of electricity who had evidently got hold of a tough customer. The latter was a stolid looking individual, who grasped the handles of the machine with the determination to have, as he expressed it, his "full ha'porth." Whether there was a "screw loose" in the apparatus, or whether the man possessed nerves of more than ordinary power, we know not, but somehow or other the electricity had no effect upon him. The professor kept piling on the agony, but to no purpose.

"Don't you feel it yet?" said he, when nearly the full power had been put on.

"No; I don't feel nothing," was the placid response. Another turn.

"Now don't you feel it?"

"No," was still the reply.

The professor looked bewildered. He had put on all the power the machine was capable of, and with no result. Such a thing had never happened before. What was to be done? He had stood at the corners of streets for two years, and his credit was at stake. At last his countenance brightened. A happy thought!

"Let's look at your feet," said he.
The patient complied by holding up one foot.
"Ah! I thought so," said the professor, triumphantly.
"You might stand there till you were blue in the face and not feel nothing. Leather is a non-conductor, don't you know? But you've got such a great hole in your shoe that, as fast as the electricity comes in at your hands it goes out at your feet! You go and get your shoes mended and come again."

My Dream.

WE reprint, by request, the following poem, which was written for THE TELEGRAPHIC, and originally appeared in No. 95, Vol. IV, of May 9, 1868. It will doubtless be new to a large part of the present readers of the paper:

"S. O." to "F. U."—Please remain on hand,
The train is late six hours or more;
You'll be wanted for orders, I understand—
Mr. B.—is here. "O. K." No more.

"Twas eight already, and "Number 1"
Was due at nine—I speak by the "card"—
And 'twas rather tough for my mother's son
To watch and wait—indeed 'twas hard—

But I laid my head on the table, near
To the sounder's click, and fell asleep.
I dreamed that I died—that I was not here
As an operator, night watch to keep.

I saw two doors, each opened wide
To a room, one light, the other dark;
The last was peopled with "plugs" who'd died,
The first by angels who read by—*hark!*

The first was heaven—a place for those
Who read by sound; the other was—well,
A place for "plugs" looking past the nose
At a strip of paper—a dismal cell.

Near at hand was an angel to test my speed,
And judge which room to award at last;
Twelve hundred words I must send and read—
I caught the key and my hand flew fast.

Twelve minutes! 'tis done; and into the place
Where the sounders were did my angel lead;
She smiled so sweet when I saw her face
That her presence was very heaven, indeed!

I was shown a table made of pearl,
And diamond laid were my sounder and key,
On either side was a fair, sweet girl—
My "messengers"—so they greeted me.

I worked the circuit direct to the sun—
On lines of light flew the marmors soft,
And then, when my pleasant task was done,
My messengers came and kissed me off.

"S. O." to "F. U."—What's the trouble to-night?
No one can break—you've been writing so fast
My pencil can't copy—alho' with my might
I have tried, but in vain. I've got you at last!"

I awoke; my office was cold and drear,
The train had passed—so the watchman said—
Here was I, on this mundane sphere,
At work by the month for clothes and bread.

Fulton, Ill., April 24, 1868.

RELAY.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

The Cincinnati Industrial Exposition.—The Award of Silver Medals in the Electrical Department.

CINCINNATI, OHIO, Oct. 10.

TO THE EDITOR OF THE TELEGRAPHIC.

THE Industrial Exposition in this city, which has closed, was a most brilliant success. The arrangements were on the most liberal scale, and the seven acres of ground which it covered were crowded with useful, curious and interesting articles, machinery and works of art. THE TELEGRAPHIC having already given a very excellent account of it, I do not propose at this time to enter into any general description of the affair, but to refer to matters more especially interesting to the telegraphic fraternity.

In the Electrical Department silver medals were awarded for the best telegraphic instrument for private use, greatest improvement in telegraphy, and the best system of railroad signals. The judges in this department were Messrs. W. W. Smith, Henry Twitchell and Prof. Locke. These gentlemen are well known as men eminent for their skill and experience in electrical and telegraphic matters. The instruments offered in competition for these medals were thoroughly and fairly examined and tested, and the awards made on their merits as practically demonstrated.

For the best telegraphic instrument for private lines Mr. E. C. Armstrong entered the Selden Printer, as

agent for the Merchants' Manufacturing and Construction Company, of New York, of which Mr. S. J. Burrill, of New York, is Superintendent; the Gold and Stock Telegraph Company, of New York, entered the Edison Universal Printer; the Western Electric Manufacturing Company, of Chicago, the Gray & Barton Printer; and Mr. Rogers entered the Rogers-Gilliland Dial Instrument. After a thorough examination and trial of the several instruments the judges unanimously awarded to Mr. Armstrong the medal for the Selden Printer; allowing the claims made for it that it was the cheapest, most simple and reliable instrument in use for the purpose for which it is offered. The Gray & Barton Printer works very rapidly, but it was considered that it is too complicated to be permanently successful on private lines.

The Edison Universal Printer was a complete failure, as it was found to be impossible to keep it in working order even during the exhibition. Supt. Gilliland, of the Gold and Stock Company (a first class electrician and mechanic), after a thorough and faithful trial, gave it up in disgust. Several of the officers and employees of the Western Union Telegraph Company tried to get it working in time for the judges to examine it, but without success; finally Mr. Winthoff, from Mr. Edison's shop at Newark, N. J., was sent on in response to a telegraphic call for help; he succeeded in getting the machine to work, and explained it to the judges. After he left the instrument worked one day. It was generally decided by electricians, experts and business men, to be a grand humbug and failure.

The award of the judges in this case caused great rage among the Gold and Stock people. They demanded an appeal, but backed down when told that Mr. Armstrong had been awarded the medal on every point claimed—simplicity, reliability and cheapness.

The award to the Western Union Telegraph Company for the Stearns Duplex Instrument, as the greatest improvement in telegraphy, was not seriously contested, and was undoubtedly fully merited. Mr. Stearns' instrument attracted much attention in the exhibition.

The award of a silver medal to F. L. Pope & Co., of New York, for whom Mr. Armstrong is also agent, for the best system of railroad signals, was a deserved recognition of the merits of an invention which is undoubtedly destined to supersede all others for the use of railroads—expediting business and securing safety in the movement of trains. The signals on exhibition were generally examined and approved by the large number of railroad officials who visited the exhibition. Owing to the short time afforded for preparation only one form of these signals was exhibited, but it is understood that various adaptations of the principle are made to cover all the exigencies of railroad service. It is hoped that at the next exhibition full sets of these signals will be shown, and they will, without doubt, prove one of the most valuable and interesting features.

The managers of this exhibition are to be congratulated upon the brilliant success which has attended their efforts to make this the best and most complete demonstration of the kind ever made in this country, exceeding, in fact, the great World's Fair held in New York about twenty years since. It has been determined that the exhibition of 1873 shall as far exceed the one that has just closed as it did all previously held, and preparations for it have already been commenced. All classes of our citizens feel a deep interest and pride in these exhibitions, and already a large guarantee fund has been subscribed for 1873, which is to be increased to half a million of dollars.

WESTERN.

The Little System of Automatic Telegraphy.

NEW YORK, Oct. 16.

TO THE EDITOR OF THE TELEGRAPHIC.

IN reference to the account of the Cincinnati Industrial Exposition by F. L. P., in your issue of Sept. 28, allow me to say that I have never entered into competition for a medal yet, neither do I ever intend to do so, but much prefer the plan which has been adopted by the International Exhibition of 1873, to be held at Vienna, namely, the presentation of a bronze medal to every exhibitor.

With reference to the firm of Craig & Little, I am not acquainted with such a firm—my system being known (under the protection of sixty patents in this country and Europe) as "Little's System of Automatic Telegraphy." Added to which is also my perfect Anti-Page or Anti-Morse system.

GEO. LITTLE,
Consulting Engineer, Automatic Tel. Co.,
80 Broadway.

From the Pacific Coast.—Interesting Items and Personals.

SAN FRANCISCO, CAL., Oct. 1.

TO THE EDITOR OF THE TELEGRAPHIC.

THERE have been some changes and events on the Western Union lines on the Pacific coast of late, which may be of interest to the readers of THE TELEGRAPHIC. The opening of the Pioche, Nevada, office is of considerable importance, to the mining interest especially. Heretofore all business for this mining district was necessarily sent via Salt Lake, and although the tariff was high the business was large. The opening of the Pioche Western Union office has caused a decrease in the charges, and a consequent increase in the business.

Mr. John W. Henderson, for the past four years manager of the office at Hamilton, Nevada, has been appointed manager, with Mr. Samuel L. Wallace as assistant. Mr. Joseph Sears, late of Reno Falls, takes the managership of the Hamilton, Nevada, office.

Mr. Benjamin Shearer, of the Reno Western Union office, has resigned, to engage in other business, and was relieved by Mr. J. W. Bendick, formerly of Waverley, N. Y.

Mr. Bettender, of San Francisco, opened a new office at Mission San José, was relieved by Mr. John J. Sabin, of Austin, Nevada, who was also subsequently relieved by Mr. J. R. Bailey, formerly of L'Anse, Mich.

Business on the Western Union lines here is increasing, and Mr. A. L. Baker has been transferred from below to the operating room of the San Francisco office. Miss Little takes charge of the Grand Hotel office in this city, relieving Miss McGeorge, who takes charge of the San Rafael, Cal., office, thereby relieving Mr. T. E. Larcombe. Mr. Larcombe relieves Mr. Swain, of Benecia, Cal., who resigns to engage in other business.

Sacramento, Cal., W. U. office has recently acquired Mr. Smith, formerly of the cable room in the New York office, and Mr. John Egan, formerly of "Cx." N. Y. office.

For the month of September there were sent and received at this office 950 cable messages. CLIX.

Marriage of a Railroad Telegrapher.—Congratulations and Good Wishes.

UNIONVILLE, IOWA, Oct. 9.

TO THE EDITOR OF THE TELEGRAPHIC.

YESTERDAY, Oct. 8, Mr. J. W. Kinsey, agent and operator at Shell Rock, Iowa, for the B. C. R. and M. R. R., was united in marriage to Miss Minnie J. Simmonds, eldest daughter of Dr. G. H. Simmonds of this city (late of Oconomowoc, Wis.).

Among those present were Mr. T. J. Stephens, agent and operator for the C. and S. W. R. R. at Edgerton, Mo., and Mr. W. H. Hemphill, agent and operator for the C. R. I. and P. R. R., at this place. Congratulations were received by telegraph from a number of brother operators who could not be present.

After the ceremony the happy pair left for Chicago and Logansport, Ind., where they have many friends.

Mr. Kinsey is well known throughout the Southwest as a No. 1 man and operator, and his many friends will congratulate him on his excellent choice and good fortune in securing for a partner one who possesses so many qualities that are calculated to make an operator's life one of perpetual happiness. May they never get out of adjustment, and no cross ever get in their circuit. is the hearty wish of their many friends. H.

Answers to Correspondents.

J. J. Q., Colorado.—If you purchase Ferguson's *Electricity* (\$1.75) and Pope's *Modern Practice of the Electric Telegraph* (\$2.00), you can, by means of them, obtain a good knowledge of electrical science. Afterwards, as you have means and opportunity, Culley's *Hand-book of Practical Telegraphy*, fifth edition, (\$6.25), and Latimer Clark's *Electrical Measurement* (\$2.50). Unfortunately, the best books on electricity are French and German. There is no work in English equal to those of Blavier and Schellen; yet one who is thoroughly familiar with the four books first mentioned may be considered an electrician of very respectable acquirements.

Personals.

Mr. C. W. PETERSON has been appointed manager of the Southern and Atlantic Telegraph Company's office at Augusta, Georgia, vice Mr. J. WOLF, resigned.

Mr. W. FRASER has accepted a position as operator in Augusta, Georgia, S. and A. office.

Mr. CHARLES ROBINSON has resigned the managership of the Pittsfield, Mass., office of the Western Union Company, and accepted a position in the New York office of the Atlantic and Pacific Company.

Mr. FRED. ROBINSON has been appointed manager of the Pittsfield, Mass., office.

Mr. F. T. BICKFORD has resigned his position with the Atlantic and Pacific Company at No. 11 Broad street, New York, and accepted a position with the Franklin and Southern and Atlantic Companies at Washington, D. C.

Mr. LEONARD COX has been appointed cashier of the New York office of the Western Union Telegraph Company.

Mr. TUNIS J. POWELL, of the Auditor's Department, Western Union Telegraph Company, who has been in charge of the Atlantic and the Cuba cable accounts since the commencement of the cable business, resigned his position on the first of this month.

Mr. GEORGE W. ROBERTS, lately of the book-keeping department of the Western Union Company, in New York, has been appointed to the position in the Auditor's Department made vacant through the resignation of Mr. POWELL.

THE Exchange Telegraph Company (Limited) have recently announced that they are now prepared to furnish the offices of subscribers in London with their telegraphic printing instruments, which will occupy not more than eleven inches of space, and will register the fluctuations of the stock and share market continuously throughout the day. The system has been at work successfully in America for the last five years.

The Telegraph.

The Western Union Telegraph Company.

At the annual meeting of the Western Union Telegraph Company, Oct. 9th, at the offices of the company in this city, after the election of Directors for the ensuing year, a report of the business and affairs of the company for the last year, and a summary for the six years since the consolidation with the American Telegraph Company was read. The last similar statement was made in July, 1869.

At that date the company were operating 56,032 miles of line, with an aggregate of 121,151 miles of wire under its control. Under its supervision and direct management then there were 4,606 telegraph offices. In June, 1872, up to which time the present report is made, the company was operating 62,032 miles of line, and 137,190 of wires, with a total of 5,237 offices. This shows an increase during the three years of 6,000 miles of line, 16,039 miles of wire and 631 offices. On June 30, 1872, there were in the employ of the company 8,347 persons.

The messages sent over the wires of the company during the year ended July 30, 1872, numbered 12,244,449, which was an increase on the previous year of 1,798,422. For the year the gross receipts of the company were \$8,457,095.77, and the expenses \$5,666,863.16. This shows a net profit of \$2,790,232.61. The receipts were increased during the year \$819,646.92; expenses \$562,075.97, and the net profits \$257,570.95.

For the past six years the net profits accruing to the company has been \$17,116,694.23. Of this amount \$4,856,879.34 has been distributed in dividends; \$1,898,401.98 has been distributed in interest and sinking fund on the bonds of the company, and the balance of \$10,361,412.91 has been used in the construction of new lines, purchase of telegraph patents, etc.

The report referred especially to the Duplex instrument, the patent of which has been purchased of the inventor, Mr. Joseph B. Stearns, as of great value. By it the capacity of the wires for business is largely increased, and it is being introduced generally on the lines of the company where it can be made available. The report stated that this invention is regarded as one of the most important that has been made since the telegraph was first put into operation.

The report concluded with a general reference to the favorable aspect of the company's affairs. It was ordered to be printed and distributed to the stockholders.

After the meeting adjourned a reporter of a city paper interviewed Mr. William Orton, the President of the company. In regard to a question concerning the capital of the company he said he was not prepared to make any statement.

"There is a report prevalent," said the reporter, "concerning the dividend of the company. It is said that a dividend will be paid this year."

Mr. Orton.—That is not so. No dividend will be paid the stockholders. We are at present exhausting our revenue on the construction of new lines and on the perfecting of our business in all parts of the Union; and at present we think it more important to extend our business than to pay dividends.

Reporter.—Was there any opposition to the reelection of the old Board of Directors?

Mr. Orton.—Not the slightest. The principal part of the stock was represented by the gentlemen present, and they all voted voluntarily on the ticket presented.

The Southern and Atlantic Telegraph Company.

A SOUTHERN correspondent writes that the Southern and Atlantic Telegraph Company are pushing their lines south as fast as possible, and that the business on the lines already constructed and in operation is good. The third district is under the superintendence and management of Mr. J. G. Thornton, who is a general favorite with the employes of the district, and an able and efficient superintendent and manager.

Election of Officers of Western Union Telegraph Company.

At a meeting of the Board of Directors of the Western Union Telegraph Company, October 10, 1872, the following gentlemen were elected officers for the ensuing year:

President—William Orton. Vice-Presidents—A. B. Cornell, O. H. Palmer, Augustus Schell, George H. Mumford.

These are all reelections.

Foreign Telegraphic Notes.

THE telegraphic tolls on despatches forwarded and received at the expense of the British Government, on the subject of the American indirect claims, amount to \$400,000.

Since the opening of the Russian telegraph to the Amoor, and its extension to the China and Japan lines, the number of messages forwarded has increased in such an unexpected and unprecedented manner that the Telegraph Department has resolved to put up another wire on the Siberian line, and the needful orders have been given for the supply of the materials, and the commencement of the work on the section between Omsk and Tomsk, as soon as the weather will permit, next spring.

The directors of the China Submarine Telegraph Company have declared an interim dividend of 3s. per share for the three months ending the 30th of September, 1872, and they announce that on and after the 15th inst. the rate for messages from London to China will be raised from £4 6s. to £6 per twenty words, and to Japan from £5 6s. to £7.

The total number of messages forwarded from postal telegraph stations in the United Kingdom for the week ended September 28, 1872, was 314,220; an increase on the corresponding week of last year of 43,588.

The second section of the Russian telegraph line to Turkestan was opened on the 12th of September from Semipolatsk to Serguipol, and is found to work admirably.

At a meeting of the Board of the Anglo-American Telegraph Company, held October 5th, it was resolved to pay the usual interim dividend of 2 per cent., on the 1st of November next, for the quarter ending the 30th of September last.

The directors of the French Atlantic Telegraph Company have declared the usual interim dividend of 2 per cent., payable on the 1st of November next, for the quarter ending September 30.

Advices from Melbourne to September 11th have been received in London. At that date the overland telegraph to Port Darwin was working splendidly.

Telegraphic and Electrical Brevities.

THE *Roanoke News*, of Weldon, N. C., of Oct. 9, says, "Mr. C. P. Hill, manager of the Western Union telegraph office here, informs us that he sent over one hundred and fifty despatches on last Tuesday. The business of the company is growing rapidly. The office of the company has been furnished with a new switch-board; it presents a very neat appearance."

The only persons left at the Tip-Top House on Mount Washington are three signal officers, who are equipped with a large stock of coal, four barrels of onions, about forty hams, twenty bushels of potatoes, a good supply of canned goods, and all manner of groceries in profusion—a violin, harmonicon, a good sized library and quantities of newspapers, and they expect to spend a pleasant winter.

A Colorado correspondent of the *Scientific American* makes the following alarming suggestion: "Why not have a whole city furnished simultaneously with the latest telegraphic news, upon the instant of its arrival, by means of a steam whistle or whistles, or a gigantic speaking machine, instead of waiting for it to go through the tedious process of type-setting, printing, folding and distribution by the carrier? The old way is too slow, even with carriers on horseback, as we have here in Denver."

Prof. Sir W. Thomson's work on electro-statics is expected to be ready for the meeting of the British Association in August. It will consist chiefly of articles on electro-statics and mathematically allied subjects, which have appeared in various publications during the last thirty years, and are now for the first time collected and printed together; it will also contain matter never before printed.

The Scientific Absurdities of the New York Herald.

THE matchless Aurora Borealist of the *Herald* launches at nanking another luminous exposition of his favorite subject. Again he says:

"There are very many theories as to the origin of the aurora, some scientists holding that it is the result of aerial electricity, while others contend that it is the reflection of the sun on the vast fields of ice in the vicinity of the North Pole.

"Among the 'scientists' who 'contend' for the latter view is the great Aurora Borealist himself. It may seem presumptuous to take issue with an authority whose word is as law to scientific amateurs, but after having carefully examined his theory we regret to say that we cannot accept it. This may be partially due to the fact that we have a theory of our own, and with most profound respect we invite him to consider the conclusion at which we have arrived, namely: that auroras are the direct result of the reflection from vast quantities of dead mackerel, piled along the Southern shore of Baffin's Bay, and probably extending as far down as the coast of Labrador."—*N. Y. Commercial Advertiser*.

Professor Tyndall's Lectures.

THE visit of the distinguished English scientist, Prof. JOHN TYNDALL, to this country, and the series of scientific lectures which he proposes to deliver in the leading cities, are events of great interest to all who are interested in scientific matters. He has received marked attentions in this city and Boston. He commenced his lecture season at Boston on Tuesday evening last at the Lowell Institute, where he delivered his first lecture before a large, intellectual and appreciative audience. This course consists of six lectures "On Light and Heat," and will be completed on the 25th inst.

New Patents.

For the Week ending August 27th, and bearing that date.

No. 180,812.—COMBINED TELEGRAPH RELAY AND SOUNDER. Geo. Little, Rutherford Park, N. J.

Shunt sounder employed to give clear sound when main line current is feeble. Constant current through one helix attracts armature, closing shunt circuit from sounder. Current through main line magnet breaks this shunt, forcing local to go through sounder.

1. The magnets *a b c d*, and swinging armatures *e f*, and connections to the main line and local constant battery, substantially as set forth, whereby the sounder is operated by the main line pulsation breaking the shunt circuit, as set forth.
2. A magnetic core adjuster, mounted so as to be rotated, and made partially of soft iron, substantially as set forth.

No. 130,831.—PRINTING TELEGRAPH. Henry Van Hovenbergh, Brooklyn, N. Y.

Step by step motion given by an electro-motor, consisting of a wheel having radial armatures mounted on type wheel shaft, and alternately acted on by different magnets.

1. An armature wheel revolved by electro-magnets, and arrested by either of the electro-magnets when its circuit is not broken, in combination with a type wheel and printing mechanism, substantially as set forth.

2. An electro-motor, composed of two electro-magnets in separate circuits, in combination with a printing magnet, the helices of which are in the same circuits as the motor-magnets, substantially as specified.

3. The printing lever and impression pad, in combination with a holding pawl, operated substantially as set forth, for drawing the paper over the pad by the movement of the printing lever.

4. The union mechanism, first operated by the joint action of the two electro-magnets that revolve the type wheel, and held in operation by either of the magnets, as alternately energized, substantially as set forth.

5. An electro-magnet with the two helices or coils in separate electric circuits, which circuits are separately employed for different operations, but jointly to operate the said electro-magnet, substantially as specified.

No. 130,884.—IRON TELEGRAPH POLE. Joseph Wels, Marion Depot, Jersey City, N. J.

A telegraph pole of three or more T shaped bars, connected with three angle irons.

An iron telegraph pole, composed of three or more bars, B, made T shaped or of angle iron, said bars being secured to a base, A, and connected by braces, C, substantially as herein described.

For the week ending Sept. 3, and bearing that date.

No. 130,971.—ELECTRO-MAGNETIC WATCH CLOCK. John M. Batchelder, Cambridge, Mass.

Central armature, carrying a pencil, is arranged between magnets controlled by switches at stations so as to mark upon one side or the other of a central line upon a disk carried upon hour hand shaft.

1. The combination of a double electro-magnet and a central armature, carrying a pencil, arranged so that marks may be made upon one side or the other of a central line upon the recording disk, substantially as herein specified.

2. I claim, in combination with the above, the two independent circuits and adjustable switches L and R, whereby the position and grouping of the marks made may be varied, substantially as specified.

3. I claim the two independent circuits from each station to the recording apparatus, for the purpose of varying the mark made from each station, substantially as specified.

4. I claim, in combination with such circuits, the switches for throwing the current from one to the other of the magnets of the double electro-magnet, substantially as specified.

No. 131,037.—TELEGRAPH POST. Amos B. Sprout, Picture Rocks, Penna.

1. The post or pole B B', provided with dowel D, winged sill A A' with corrugations *g g*, and with or without the concealed ferrule *e e*, substantially as and for the purposes set forth and shown.

2. The cross piece C, provided with notch *f*, eyebolt *e'*, and nut *e''*, as and for the purposes described.

3. The metal sill A A', provided with closed socket D', wings A A' cut away at *x y* beneath, and with or without corrugations *g g*, substantially as and for the purposes described.

For the week ending Sept. 10, 1872, and bearing that date.

No. 131,171.—RHESSTAT FOR TELEGRAPHIC PURPOSES. George Little, Rutherford Park, N. J.

Large number of helices combined into one rheostat. Helices incased and protected from injury by wear or other causes. Sliding finger bearing on rings connected to helices brings into action greater or less resistance.

A series of helices connected to insulated plates or rings, substantially as set forth, in combination with a sliding adjuster, substantially as set forth.

No. 131,306.—VERTICAL TELEGRAPH KEY. Arthur B. Shearer, Davisville, Cal.

Vertical stem, sliding in guides, makes contacts by positive up and down motion.

1. The vertical stem *j*, with its knob or finger plate K, in combination with a proper guide block, C, and retracting spring, *s*, substantially as and for the purpose above described.

2. The guide block or tube C, with its guiding channels, in combination with the bar *f* and perforated foot *g*, substantially as and for the purpose described.

3. The guide block or tube C, with its flattened side, and having the vertical slot *e* communicating with the central opening, in combination with the slotted tube *s* and stem *j*, with its arm *v* and the set screw *w*, all combined and arranged substantially as and for the purpose described.

4. The vertical stem *j*, with the opening in its upper end, in combination with the adjustable stem *u*, with its arm *v*, substantially as and for the purpose above described.

The vertical stem *j*, with the opening in its upper end, in combination with the adjustable stem *u*, with its arm *v*, substantially as and for the purpose above described.

5. A telegraphic signal key, arranged to be operated vertically in a guide block, C, substantially as described, for the purpose specified.

Married.

KINNEY—SIMMONDS.—At Unionville, Iowa, Oct. 8th, Mr. J. W. KINNEY, agent and operator at Shell Rock, Iowa, for the B. O. R. and M. R. R., to Miss MINNIE J., daughter of Dr. G. H. SIMMONDS, of Unionville.

The editors of THE TELEGRAPHER were generously remembered in the distribution of the nuptial cake, for which they return thanks.

ENTERPRISE.—Discovering mares' nests and secret associations of telegraphers.

A pastor in one of the Cincinnati churches preaches against lightning rods and insurance companies. He says the one is defying the God of heaven while the other is a refusal to trust Providence.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, OCTOBER 19, 1872.

Premiums and Commissions.

We have decided to make a slight change in the terms of subscription for THE TELEGRAPHER. For the future the "Club terms" are done away with. But few subscriptions are now made in this way, and the club system is more trouble and annoyance to us, our agents and subscribers, than it amounts to. Single subscriptions will remain as before, at \$2 per year, payable in advance.

We shall not at present offer any long premium list, but will make the following premium propositions: For four subscriptions to THE TELEGRAPHER, at the regular subscription price for one year, we will send a copy of the paper free to the person sending us the subscriptions.

For ten new subscribers we will give, as a premium, PICKETT's Memorial Bust of Prof. S. F. B. MORSE. This bust is what is termed cabinet size, and is finished after the style of the celebrated ROGER's groups, and is a superior work of art.

To those who may interest themselves in procuring subscriptions we will allow, in lieu of the above, for new subscribers, 20 per cent. upon the amount collected, which may be retained in cash, or we will send any books or instruments that may be desired for the amount of commission as a premium.

We trust that these propositions will meet with approval, and that the friends of the telegraphers' organ will at once use their best exertions to secure a handsome addition to our subscription list.

The Prosperity of the Telegraph Interest.

THE synopsis of the report made to the Stockholders of the Western Union Telegraph Company at the recent annual meeting, which we print in another column of this paper, shows, in a very striking manner, the prosperity of the telegraph interest in this country. Although that company has made no dividends to its stockholders since July, 1869, the three years which have elapsed since that time have been years of unprecedented success financially. The surplus of profits has been very large, and is increasing at the rate of nearly \$300,000 per year. The profits have been applied, in pursuance of the policy adopted three years ago, to purchasing the stock of the company and reducing its unwieldy and disproportioned capital to more manageable proportions. It is understood that from ten to eleven millions of the stock, at its par value, have been purchased already, and is held for the company, although it has not yet been cancelled. This would make the present actual capital of the company, at par, about thirty millions of dollars, besides the bonded debt of some six or seven millions of dollars. It is understood to be the purpose of the managers to still further reduce this amount until the stock and bonds together shall not aggregate over \$30,000,000; and after paying the interest, and contributing a proper amount to a sinking fund, it is believed that regular dividends of ten or twelve per cent. can be made.

This policy, while it bears rather hardly upon some of the smaller stockholders, is undoubtedly a wise one, and very profitable to those who have managed the affairs of the company since it was adopted. Under their manipulation the stock has advanced from 33 per cent. to 75 or 76 per cent. of its par value, and if it is carried out, must advance it to par or over when dividends are resumed.

While the capital stock of the company is being reduced the value of its property is being increased by the addition to and extension of its lines, the number of its offices, and the development of its business.

The report speaks very highly of the duplex instrument invented by Mr. JOSEPH B. STEARNS, the patents of which for this country are now the property of the Western Union Company. It is estimated to be worth a million of dollars to the company, and adds greatly to its facilities and capacity for business. In this connection it is somewhat amusing to read a former report of Mr. ORTON's, in which the duplex instrument is declared to be of little or no value and importance, and to be open to the company in any event, should they desire to use

it. It would seem that their opinion has greatly changed since then in regard to this instrument, and it is not impossible but that in time they may become similarly enlightened in regard to insulation, automatic telegraphy, and other matters which have been similarly scouted. When this report is printed we may refer to some other points in it which do not concern our present article.

This prosperity of the Western Union Company has been shared to some extent by the companies which compete with it for the telegraph business of the country. The past year has also been one of unusual prosperity for most of them, and we believe that generally their yearly accounts will show a balance of profit.

We rejoice at the evidence that telegraphy is becoming a paying and profitable business. With more practically scientific management and economy it may be made susceptible of reasonable profit, even with a considerable reduction of the present charges for telegraphic service. While we are not now and never have been advocates of what is popularly termed cheap telegraphy, we are yet confident that reduction can and should be made from time to time in the rates charged. To be safely made these reductions must of course be gradual. Any such reduction as is demanded by the postal telegraph advocates would of course be suicidal for private enterprises, and, if made through a Government administration of the telegraph, would necessarily and certainly entail an enormous deficit in the revenues of the postal department, in addition to that already experienced from cheapening postal service below its actual cost, as is done in this country.

It is to be hoped that telegraph employés will reap a portion of the benefits experienced by this prosperous condition of the telegraphic interest. When the telegraph is depressed they suffer, and when it is prosperous it is no more than fair that they should participate in its prosperity. They do this, it is true, to a certain extent, in the greater demand for their services, and the certainty of receiving their stated compensation, but they are entitled to something more than this. We believe that an arrangement by which those who are diligent and faithful in their services should participate directly in the proceeds of their labor, would be advantageous to employers as well as employés. But while there is no concert of action or interest among them they cannot expect that there will be any special attention paid to their welfare, further than the necessities of the business may require. With unanimity and concert among themselves, we have no doubt but that anything in reason would be conceded to them on authorized representations on their behalf. Managers of great corporations are not apt to devote much time to the consideration of the wishes and interests of employés who do not present their own cases, and respectfully ask attention to them. Strikes are foolish and unnecessary, but there are better and more effective and certain ways of reaching proper and desirable ends. If telegraphers will not adopt them they must be content to receive such benefits from the present prosperous telegraphic condition as may incidentally fall to them.

Is Paine in Ohio?

It would seem, from the following extract from a letter from Portsmouth, Ohio, published in the *Cincinnati Enquirer*, that our old acquaintance, HENRY M. PAINE, must have emigrated to Ohio, and located at Portsmouth. It appears that this time there are two of them, and the secret is not jealously confined to one breast, as in the Newark operation. In the coal difficulties which beset our English friends the news herein communicated, that electricity is (again) about to supersede steam as the motive power of the world, will be very gratifying to them:

"Two gentlemen of this place, of an inventive turn of mind, are engaged in the construction of a machine which, if it is successful, threatens to revolutionize the motive power of the world. They confidently expected to have had it finally completed for entry at your Exposition, but were unable so to do. While I am not at liberty to enter into any full detail of its workings thus far, I can say this, that it looks as if it would be all that they confidently expect.

"It is simply this—applying electric magnetism to machinery as a substitute for steam. They claim that they can advantageously use the electric magnet as a mechanical agent. It is well known that our Government and the Government of Russia made appropriations for a Russian scientist to experiment in this

direction. They know the strands upon which he floundered; they know what difficulties were in the way, and to them they have directed their work. Lack of economy was one great thing the Russian failed to overcome; this they claim to have already set aside. They claim to have by their invention so far neutralized the effect of the only powerful objection to successful working, viz., the diminishing power of the magnet as distance increases, and controlling to a great extent the electric currents put in motion by moving machinery. In an economical point of view it will certainly be a success.

"Whether it be a success or a failure it will not be without its effect, as from this other experiments will follow, until there will come from this something new and useful in the field of mechanism. Such a humanitarian invention would certainly make a fame for its discoverers that would extend over every land under the sun. I am promised to be allowed to see the working in a short time and will let you know further about it. Patents are pending on two distinctive parts of the machine."

The West India and Panama Cable.

THE West India and Panama submarine telegraph cable, which it will be recollected was lost while being laid a year ago, and which it was feared would prove a total loss, has at length been recovered and completed, and is now in successful operation. Advice from Havana of the 9th inst. gave the gratifying information that Sir CHARLES BRIGHT had recovered it, and that on the previous day the shore end was laid to Harbor Head, Jamaica. The cable was found to be in good working order, and on the 9th inst. was thrown open to public business, and news despatches were received from Aspinwall at Jamaica.

We are pleased to be able to congratulate the Company, and its able telegraphic engineer, Sir CHARLES BRIGHT, on the success which has at length crowned their persevering efforts to complete the enterprise that has met with such serious misfortunes and protracted delays. This connection is a most important one, and completes, we believe, the system of telegraphic communication of the West India islands.

Printing Telegraph Instruments.

It has been said that of the making of many books there is no end, and the same is true of printing telegraph instruments. The columns of THE TELEGRAPHER, especially the one devoted to recording the claims of patents issued from week to week from the United States Patent Office, will fully verify this assertion. Up to the time when the Printer for private telegraph lines was brought out by POPE, EDISON & Co., very little had been done in this specialty; but the success which attended that enterprise incited others to devote their time and skill to producing a class of instruments which it was seen met a public demand. We cannot attempt to enumerate them, but the number of such instruments already patented would surprise those not familiar with the subject. Some of these are worthless, and never get beyond the patent list into practical operation. Others, though possessed of merit, are inferior to or in no especial respect superior to others already in use, and these, after struggling for awhile for recognition, are shelved and heard of no more. A few, like the POPE & EDISON, the PHELPS and the SELDEN, get into more or less extensive recognition and use.

In the department of reporting printing instruments, or, as they are more familiarly known, gold and stock printers, there appears to be impending a very active competition. The original Gold and Stock Telegraph Company, with the instruments of CALAHAN, LAWS, POPE & EDISON, and PHELPS, have had a practical monopoly of the business for the last two years. This is now about to be disputed by the Gallagher Gold and Stock Telegraph Company, with the monogram printer of Mr. R. H. GALAGHER, which seems to be a very good one; and another concern with a new printer, the invention of Prof. J. E. SMITH. The instrument of Prof. SMITH is much more rapid in its operation than the others, and is claimed to be in every respect a superior instrument. The one we have seen in operation certainly appeared to work in a very perfect manner. We hear of other printers, both for private lines and for quotation purposes, in *esse* and *posse*; and, as competition is said to be the life of business, there is no doubt but that those who are interested in printing telegraphy will find all the liveliness they may desire in their specialty in the immediate future.

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With improved facilities for the manufacture of BRAIDED
LINEN or COTTON COVERED OFFICE WIRE, either plain or
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ARTICLE, in any quantity, on the most reasonable terms.
The Gold and Stock, and the American District Telegraph
Companies have been supplied from my works with the larger
part of the office wire used by them.

SEND FOR SAMPLE CARD.

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This Instrument is offered to the public as the oldest, most
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It has already been extensively adopted, and has invariably
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They also manufacture and put up
THE ELECTRO-MAGNETIC WATCH CLOCK,
which is the best watchman's time recorder in the world. Also,
ELECTRIC AND CONTROLLED CLOCKS

of all kinds,
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TELEGRAPHS OF THE UNITED STATES
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The great advantage which they possess over other manufac-
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(averaging 1,200 feet).

All telegraphers know that, in nine cases out of ten, breaks in
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This Wire is necessarily subject to the tests, etc., imposed by the
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A large stock always on hand and for sale at the lowest market
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TELEGRAPH LINES
OF ANY LENGTH FULLY EQUIPPED WITH
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THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

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Baltimore, Md.,
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Cincinnati, Ohio,
Columbus, Ohio,
Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
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Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
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Taunton, Mass.,
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The Distinctive Features of these Systems of

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ARE,

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bells.

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for hose and engine houses, by means of which the location of
the fire is instantaneously communicated to the members of
each fire company.

These Features combined form the

Only **PERFECT, COMPLETE** and **RELIABLE** System

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by
the Proprietors of these systems of

FIRE ALARM AND POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of
practical use, and that the efforts which have been repeatedly
made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to
adopt other systems having demonstrated their insufficiency
and unreliability, and resulted in their abandonment, and sub-
stitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. **GAMEWELL & CO.** are the owners of the
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important of which has just been extended for seven years, and
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The most important improvement which the Proprietors have
adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little ex-
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communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

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AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POS-
SIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruc-
tion, and the number of lives which have been preserved
through the general adoption of this system, throughout the
UNITED STATES and the DOMINION of CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for
any considerable length of time, they have been enormous, THERE
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their efforts will be duly appreciated and
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Any information desired in regard to the above
system will be cheerfully and promptly furnished
upon application at the office.

A pamphlet, setting forth more fully its advantages and
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These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

JONES' LOCK SWITCH-BOARD,

a most compact and reliable switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

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We are now prepared to furnish, after an experience of three years, an Insulated Wire, which can be buried in the earth or exposed to rain and sun, or to the vapor of acids, without injury. Professor SILLIMAN, who has exposed it to the most destructive agencies, finds that it remains uninjured in an atmosphere of ozone, which would destroy gutta-percha in a few hours. It exceeds glass or any other known substance as a non-conductor.

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We shall be happy to furnish estimates for any amount and size of cable, which will be found to compete with any other construction, both in quality and price.

We manufacture the Genuine ELECTROPOION BATTERY, with Patent Platina Connection, introduced by us eight years since; also, THE ALPHABETICAL OR DIAL TELEGRAPH, now extensively used in this and other cities for private lines, being easily and quickly learned by any one.

We offer for sale, among other novelties, a SOUNDER that will work practically with a single DANIELL cell, a BATTERY that does not require to be taken down but once a year, and the very best MAIN LINE SOUNDERS made.

Our CATALOGUE, embracing a large amount of new matter and description, is now ready for distribution.

AMERICAN COMPOUND TELEGRAPH LINE WIRE COPPER FOR CONDUCTIVITY. STEEL FOR STRENGTH.

The superiority of the COMPOUND TELEGRAPH WIRE, compared with iron, consists in its LIGHTNESS, reducing by over fifty per cent. the number of poles and insulators required;

Relative TENSILE STRENGTH, homogeneity and elasticity—decreasing the liability to breakage from cold weather, sleet, etc.;

CONDUCTIVITY—insuring great improvement in the working of lines in any condition of the weather;

And in its DURABILITY, which greatly exceeds that of the best galvanized iron wire;

Altogether resulting in a very great reduction in the cost of maintaining and working telegraph lines, while, at the same time, insuring

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HICKS & SHAWK,
AND TO

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offer to the trade and to consumers generally, the best quality of TELEGRAPH SUPPLY GOODS and MANUFACTURES.

This Company is organized with ample capital and facilities to meet promptly any demands on it of whatsoever nature. The finest assortment of Instruments in use in telegraphic practice kept constantly on hand.

Specialties made of

Fire Alarm Street Boxes—Improved Pattern.

These Instruments will work in any circuit, and their performance is guaranteed.

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" " Mechanical " " "

" " " " for striking large Bells.

CAUTION.—Parties desiring to purchase Improved Fire Alarm Telegraph Apparatus are respectfully requested to beware of representations made by any one who professes to show our system, while really exhibiting and vending another.

An egregious case of humbug of this sort has recently come to our knowledge, and the party thereto will be prosecuted.

Also, of Dial Instruments, Repeaters, Hotel Annunciators, &c. Several Novelties in preparation; among others

A NEW REPEATER, and a

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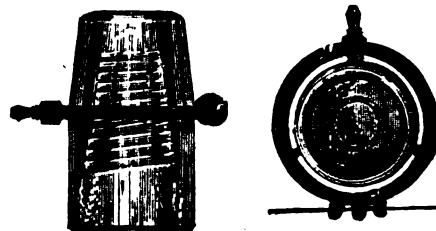
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CHESTER'S PATENT INSULATOR.



The undersigned solicits examination of some of the reasons which have induced him to recommend to his patrons and friends the Insulator exhibited above as the best and cheapest in use.

Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal.

As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

TELEGRAPH WIRE.

The attention of

Telegraph Companies, Superintendents and Line Builders is called to a

New Article of TELEGRAPH LINE WIRE

OF UNEQUALLED QUALITY AND UNIFORM EXCELLENCE.

While great care and attention has been given to Instruments and Insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European Governments, only fit for fencing purposes. Many tons of such material now remain here, utterly unsaleable and unfit for use.

The researches of the able electricians of Europe have resulted in establishing a standard of excellence for Telegraph Wire far exceeding that with which we have heretofore been satisfied.

We extract from the minute and specific details a few of the requirements of a

STANDARD GOVERNMENT WIRE.

1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable, and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be coiled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications a breaking strain of 1,260 pounds or No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

We now offer for sale this Uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market, to which this system of tests is uniformly applied.

We shall designate it by the Trade Mark,

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The capacity or endurance of No. 9 is 21 to 23 twists upon itself in six inches of length, after having been subjected to the two per cent. of elongation.

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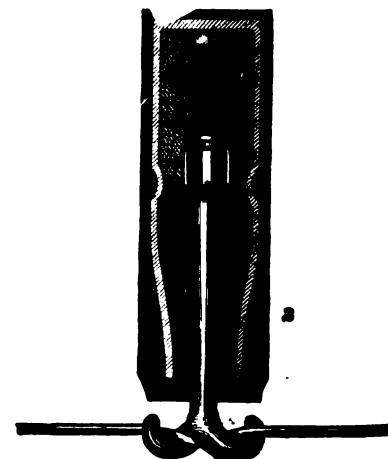
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The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 62.

New York, Saturday, October 26, 1872.

Whole No. 328

Original Articles.

Electricity and Steam.

RAILROADS preceded the telegraph, but the latter has become the indispensable adjunct and collaborer of the former. They now go hand in hand, and wherever the railroad becomes an established institution the telegraph is introduced as a matter of course, and electricity in its various adaptations is used to facilitate its operations, and to ensure safety, economy and reliability in its operation. Without the telegraph the working of railroads becomes a matter of difficulty, uncertainty and unreliability; and as time passes and lines of transportation become more numerous and extended, the value and efficiency of electricity, in cooperation with steam, is more and more demonstrated.

Railroad telegraphy has become a distinct and well defined branch of the telegraph business. It has, heretofore, engaged in its service, and is doing so to a still greater extent, some of the best talent in the profession. The positions of superintendents, managers and operators of railroad telegraphs are positions of the greatest importance, and demand that in filling them no inferior or mean talent shall be employed. Not only property of great value but the lives and safety of multitudes of people are constantly dependent upon the reliability and faithfulness of the telegraphers engaged in regulating the movement of trains. A few moments' inattention or stupidity upon their part may have the most disastrous results.

It has been supposed that any kind of telegraph service, provided it was to be had for a small amount of compensation, was sufficient and good enough for railroad purposes. This false economy is gradually coming to be regarded in its true light, and a better class of telegraph employees is being engaged upon the telegraph lines exclusively or mainly devoted to railroad service. A railroad which is of any considerable importance, or upon which a large amount of business is done, imperatively requires that a telegraph department, with facilities coextensive with the road, and adequate to its requirements, should be established and maintained in a state of thorough efficiency. The managers of the main lines of railroad transportation throughout the country are year by year more generally recognizing this fact, and where such a service is not already in existence efforts are made to secure it.

Until within the last few years the control of the vital telegraph patents, by telegraph corporations, placed the railroads practically at their mercy, and in order to obtain any kind of telegraphic facilities they were obliged to concede such terms as the owners of the patents on the several routes chose to dictate. It is hardly necessary to say that these terms were seldom favorable to the railroad companies, or calculated to facilitate the establishment or extension of telegraph facilities for railroad service. With the lapsing of these patents railroad managers were freed from this dependence, except so far as it was perpetuated by contracts which remained in force after the conditions upon which they were based had ceased to exist. From that time railroad telegraphy began to assume the distinctive character and importance which it has now attained. From being a matter subordinate to the interests of telegraph companies, the railroad service on some routes became the exclusive, and on others the superior interest. This is but right and proper, and on all important and main routes the wires devoted to railroad purposes should be exclusively used therefor.

The loss of their practical control over the railroad telegraph lines has always been a sore point with the leading telegraph managers, and they have been casting about for some means by which they might regain their supremacy. The Western Union Company, by its numerous consolidations, had become the chief proprietor of the interests connected with railroad telegraphs. Naturally the managers of that corporation were chagrined at the independence of the railroad interest, and fully realized the fact that a most valuable franchise had escaped from them. The railroad managers were no longer subordinated to them in the vital matter of telegraphy. For some time there seemed to be no help for this. At last, however, it was supposed that the means of regaining their lost power and importance had been discovered. In the *Page patent* it was believed the means had been found which should

again subordinate and render tributary to that company the railroad as well as all other telegraph interests of the country. Proceeding cautiously, but, as it was believed, surely, they seek to establish the validity of that patent, which it is supposed will give to the company a practical monopoly of telegraphy in this country for many years, or compel the Government to purchase the business, property and franchises at a rate which will amply compensate all concerned. It has become, therefore, the interest of railroad companies to join earnestly in the contest which is to be made against that most monstrous and outrageous grant to Prof. Page and his legal representatives.

But it is not only in the ordinary telegraphic facilities that electricity becomes the handmaid and assistant to railroad service. The adoption of some system of electric safety signaling has become a necessity, and appreciating this fact, railroad managers are anxiously looking for the introduction of such a system. To secure general adoption and use the signal system must be simple, perfectly reliable, or as nearly so as any human device can be, and at the same time economical. The attention of inventors has been for some time past turned in this direction, and numerous devices have from time to time made their appearance, and those interested in them have claimed that the desired result had been reached. It is not too much to say that upon practical trial they have heretofore failed to justify these claims. Some of them have worked reasonably well for a short time, and then, for reasons which are obvious, have failed. The automatic signals have been vitally deficient in their methods of connecting the rails with the electric circuit controlling the working of the signals. It has been found by practical experience that no attachment, in the shape of levers or springs, can be made to rails which will permanently stand against the immense concussion of the trains as they pass rapidly over them. As a consequence, after a short time the signals cease to work, or work with so little certainty or reliability as to be worse than useless, and are eventually abandoned. Another objection to such signals has been the complicated machinery employed, and the number of wires and large amount of battery required to work them.

To be reliable the signals should be simple, and as little liable to derangement as it is possible to make them. Instead of seeking, as apparently some inventors of electric railway signals have, to add to the complication of the machinery, the number of wires and amount of battery employed, simplicity of construction and economy of wires and battery should be sought. The principal difficulty appears to have been that there has not been applied to this matter scientific and mechanical knowledge and ability requisite to produce satisfactory results.

There is reason to hope that the difficulties which have hitherto proved so formidable have at last been overcome, and that a system of railroad signals, scientifically and mechanically adapted to effect the desired results, is now, or soon will be available for all railroads that shall require them, and what railroad does not? For the last two years practical telegraph and mechanical skill, and scientific ability have been combined in perfecting such a system, and it has been already sufficiently tested in practical use to demonstrate the correctness of the principles upon which it is based, and the adaptability of the machinery employed to produce satisfactory results. The inventions referred to are combined in the railway signal system which is now being introduced by Messrs F. L. Pope & Co., the agents of the Electric Railway Signal Company, and which is covered by patents issued to Mr. Pope and Mr. S. C. Hendrickson. The automatic signals adapted for use upon double track roads are connected directly to the rails, which themselves form a part of the electric circuit, thus obviating the necessity of any lever, spring or other attachment, liable to be deranged by the use of the road. For single track roads they have a system of semaphoric signals which can be reliably and economically worked. This system is the one exhibited at the recent Industrial Exposition at Cincinnati, and which was awarded the silver medal over several competitors. Owing to lack of time for preparation it was impossible for them to show their entire system at that exposition, but the superiority of the semaphoric signals exhibited over any previous invention was generally conceded by the railroad officials

and electricians who had an opportunity to examine them, as it was by the committee of experts who made the award.

This system comprises all descriptions of signals required in railroad operation, and it is confidently believed will eventually come into general use on railroads in this and other countries.

The combination of railway signals with the track as a part of the circuit, which is essential to permanence and reliability in operating automatic railway signals, is secured in patents recently issued to Mr. Pope in this country and Great Britain, and cannot be used in other systems except by license from the Electric Railway Signal Company. The advantages claimed for this system of railway signals is its simplicity, reliability and economy. It accomplishes, with one or two wires and a small amount of battery, more than other systems with numerous wires and an amount of battery in some cases which of themselves are almost sufficient to preclude their use.

If the claims which are made for this system, and they seem to be well founded, are substantiated, it will undoubtedly prove most valuable for railroad purposes, and its general adoption will greatly lessen the number of accidents, the mutilation, and loss of life and destruction of property upon railroads, and electricity will more than ever prove the efficient ally and coworker of steam in the railroad service.

This statement is not intended as a puff for the new system, which must stand or fall upon its merits, as shown in practical operation, but to illustrate the close relationship between steam and electricity, and the value and importance of the latter to the former in facilitating the highest development of its efficiency and reliability in the enormous business of transportation of persons and property. Great as has been the value of electricity and telegraphy to railroads heretofore, it is unquestionably true that in the future this value must be enormously increased; and an enlightened management of both interests will seek to hasten instead of retarding their mutual development.

On Signals Observed in a Wire Joining the Earth Plates in the Neighborhood of a Third Earth Plate Used for a Telegraphic Circuit.

BY G. K. WINTER, TELEGRAPH ENGINEER MADRAS RAILWAY.

IN the course of some experiments on earth currents an effect was observed which has led to the discovery of a fact which may be of some practical value, besides throwing additional light upon the part played by the earth in telegraphic circuits.

Although several telegraph lines pass through Arcnum only two are terminated at that station—one connecting it with Cuddapah, a town lying 120 miles to the northwest, and the other, which is very little used, connects it with Conjevaram.

Two earth plates were imbedded in the ground in a line running east and west and nearly radial to the office earth plate; they were about a quarter of a mile apart, and the nearest was about the same distance from the office plate. A wire was erected on separate poles, connecting the two experimental plates. When a reflecting galvanometer, similar to those used for cable signaling, was inserted in this circuit, there was a pretty strong deflection; but riding on this deflection, as it were, were distinct signals, which were ultimately, on comparison, found to agree perfectly with the signals passing on the Cuddapah wire.

The experiments were made in a building at least 150 yards from the telegraph office, and the poles carrying the experimental wire were at least that distance from those carrying the Cuddapah wire. It is utterly impossible, therefore, that any accidental leakage could account for the signals. On other wires running in other directions, and varying from one to two miles in length, the same effects were observed; so that the currents going to earth at the office earth plate must radiate from it through the earth, and the signals in the experimental wire must have been derived from those radiations.

The signals I have now made perfectly legible by using a thick wire reflecting galvanometer, filling the

mirror chamber with water to steady the needle and mirror.

I have, in conclusion, to express my thanks to Mr. Lundy, of the British-Indian Extension Telegraph Company, for having kindly lent me a reflecting galvanometer and one of his staff accustomed to read by the mirror. I may also mention that, when speaking to him on the subject of the signals I had observed, he said he thought they were due to a wire that was terminal at Arconum. I was myself of the same opinion but had not at that time actually made the comparison. —*Philosophical Magazine.*

To the Magnetic Telegraph.

THE following poem was printed in the *American Telegraph Magazine* for July 15, 1863. This magazine was published and edited by DONALD MANN. The magazine was not successful, and, after a brief existence, met the fate of all telegraphic publications in this country prior to THE TELEGRAPHER. At that time the ocean telegraph was considered a problematical experiment, and the telegraph itself was a far less important interest than at the present day; but the poet anticipated the time when all natural obstacles should be overcome and the magnetic telegraph become universal. But few of the present generation of telegraphers, probably, have even heard of the magazine, and the poem itself is well worthy of reproduction.

"Harp of a thousand strings!"
Swept by a mightier minstrel than the wind;
A viewless spirit, whose unfettered wings
Leave all save thought behind.

Outvying in its flight
The fleeting footsteps of the panting steed,
The arrowy keel that cleaves the billows bright,
Or the fierce engine's speed.

Thine is the magic spell,
With deepest tones the human heart to throb;
The power outvying feeble speech, to tell
Tidings of good or ill.

Thou who dost herald on
To the vast inland, stretching far and wide,
Tales from the ships, whose moorings yet unwon,
Must still the wild waves ride:

Telling of kings and thrones,
A nation's downfall or an empire's birth;
Revealing, in thy weird and mystic tones,
Strange histories of earth—

Of famine, fire and flood,
The fearful earthquake or the whirlwind's breath,
The ocean tempest, or the field of blood,
The pestilence and death:

Or tidings sweet and dear,
The blissful messages of love and peace,
To waiting hearts that yearn from thee to hear
Hope, joy, return, release!

Thou who shalt link all lands;
Thou who at last shalt span the stormy sea,
Binding the nations into brother-bands,
What shall we sing of thee?

The earth whereon we tread,
The mighty billows rolling over thee,
The lightning's flash, the sky, the clouds o'erspread,
Shall yet thy minstrel be.

Thou messenger of mind!
Thy triple cords shall make the electric zone
Which heart to heart, as shore to shore shall bind,
When space shall be unknown!

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Friendly Criticism of The Telegrapher.

CHICAGO, ILL., Oct. 20.

TO THE EDITOR OF THE TELEGRAPHER.

It has seemed to me that THE TELEGRAPHER has been rather unjust at times towards certain officials of the Western Union Telegraph Company, and that it sometimes opposes the policy of that company without sufficient consideration of all sides of the question. While it may suit for the time being the ally and malevolent of the fraternity, even if in the employ of the company and receiving its pay for their services, to see the attacks made upon it in the columns of the paper, it certainly must make the judicious grieve. It is not my purpose to enter into an elaborate defence either of the officials or the company. Perhaps they need no defence, or have no defence to make; and as the official organ of the company does not attempt to vindicate either, it is to be presumed that such is the case.

Then, again, in the treatment of other telegraph companies there seems to be a favoritism which should not be found in a professedly independent journal like THE TELEGRAPHER. For instance, in the case recently decided by the Supreme Court of this State against the Managers of The Great Western Telegraph Company, there is nothing in the report of that decision, as it appeared in THE TELEGRAPHER of Oct. 5, to show the worst features of the concern, or the fraud which the Court found to pervade the entire organization and management of that company, from its inception down to the present time. It would seem that THE TELEGRAPHER, if it is what it professes to be, independent of all telegraph companies and combinations, should expose such transactions as that which has characterized the Great Western Company.

I will not further particularize, but say that I am not interested to the amount of a dollar in either of the companies named, and am not in the employ of either. As a telegrapher, and as a lover of justice and fair dealing, and as a friend of THE TELEGRAPHER, especially, I have taken the liberty to call your attention to these matters. THE TELEGRAPHER is worthy of all commendation for its persistent and able support of the rights and interests of the telegraphers of the country, and for its enterprise and ability as a telegraphic newspaper. It could not well be spared, and I trust that the day may be far distant when it shall cease to cheer us with its weekly visits. What I desire is that if it be at fault, in any respect, the error may be corrected, and that justice may be done in its columns to all, without respect to persons or companies. I may be in error in my criticisms, but if so am ready and willing to be convinced of the fact. JUSTICE.

The Telegraphic Labor Question.

BALTIMORE, MD., Oct. 15.

TO THE EDITOR OF THE TELEGRAPHER.

THE page of THE TELEGRAPHER which is devoted to the publication of the contributions of correspondents is to me and many others of the readers of the paper a most interesting one. The policy adopted of giving an opportunity for telegraphers to freely ventilate their ideas is most excellent, and is doubtless productive of much good. While there are many ideas and sentiments advanced which do not meet my approval, yet there can be no reasonable objection to free discussion of any and all topics which are of interest to telegraphers. Many of the ideas advanced are crude and illogical, but they manifest an earnest desire for the advancement of the profession, and an improvement of the condition of its members, which is worthy of consideration and encouragement.

My attention was particularly attracted to a communication in a recent number of the paper, over the signature of "Sentinel." The ability displayed by the writer, and the evident sincerity and earnestness with which he advocates his, it must be confessed, somewhat radical views, indicate that he is a thinker as well as a worker. His conclusion that the only remedy for existing evils is a trades union organization, pure and simple, and upon a thorough protective basis, is a most momentous one for all concerned, should it become the general sentiment of the telegraphic profession. For one I am seeking light on this subject, but so far have not been able to go to quite the extent that "Sentinel" does in my ideas and conclusions.

It has seemed to me that this trades union business has been rather overdone, and that the balance of good has not been on the side of trades unions and strikes. It is true that these have sometimes accomplished their immediate purpose, but has it not been at an expense, all things considered, which more than counterbalanced any benefit derived? And again, is there not, after all, some better way of reaching any reasonable purpose? "Sentinel" has decided for himself that all other methods of so doing proposed heretofore are "absurd." He may be right; but if so, the greater number of the telegraphers of the country must be wrong, or the union would be organized and the attempt made.

Personally I have been much pleased with the policy which you have from time to time suggested editorially—that is, an organization of the fraternity—and an effort to be made by this organization to arrange amicably with telegraph employers for such reforms and regulations as may be necessary for the interests of all parties. It must be recollected that there are two sides to this question, and that employers have rights as well as employes. The attempt might fail, though I do not believe it would if it was sustained by and represented the majority of the fraternity. But suppose it should fail, are we in any worse condition than we were before? Do any considerable number of telegraphers believe that "Sentinel's" idea of a trades union organization will be carried out for years to come? Why not then avail ourselves of this time to make the effort in another direction?

While I have the greatest respect for "Sentinel's" opinions, and faith in his perfect sincerity and willingness to back up those opinions by his personal effort, I do not believe that his views are at this time practical, or that there is any probability of there being any earnest or persistent effort to carry them into effect. PRACTICAL.

A Proposed Unobjectionable Telegraph Organization.

TO THE EDITOR OF THE TELEGRAPHER.

I WOULD respectfully suggest that we are not yet organized, but I believe we can organize without difficulty and without injury to any one.

To this end I herewith submit a series of resolutions, to be adopted or rejected by all telegraphic employes who are now subscribers to THE TELEGRAPHER. It will be considered that all who do not reject by mail to you, before January 1, 1873, are in favor of the resolutions. Members may withdraw at any time after that. Silence enrolls to membership.

Resolved, That, for the welfare or injury of the human family, the telegraph is the most powerful instrument in the hands of man; that this being our belief, we, from this time, study to bring it in its operation into harmony with the laws of God Almighty, as manifested through Jesus Christ; and that, individually

and collectively, we look for guidance and support to the Divine Word only.

Resolved, That we begin our work by correcting in ourselves anything which conflicts with the spirit of the leading resolution, aiming to become more trustworthy by adopting greater regularity, greater carefulness, that our work be finished and clean when it leaves our hands; greater solicitude to do well our part in every particular; avoiding all profanity at once over the wires and anywhere and everywhere while on duty; exercising greater economy in the use of supplies belonging to the employers—not using so much as a pen full of ink for our private use or any wrong use; sending messages so that it shall be a pleasure to the receiving operator to take them, and copying our messages so that the public cannot possibly misread.

Resolved, That, while numerous other points are to be considered, the first and specific work shall be to cease from profanity over the wires, and that until this be accomplished by all members no second specific work shall be undertaken. MEMBER No. 1.

A Telegrapher's Social Party.

TORONTO, Oct. 18.

TO THE EDITOR OF THE TELEGRAPHER.

ON Wednesday, the 16th inst., we enjoyed what is seldom known in this section, a telegrapher's social party. The "Knights of the Key" in this city, with their friends, left the Union station per special train for Eagle Hall, Weston, where they arrived in good condition at 8.30 P. M.

It was not long before the delightful strains of a splendid quadrille band were heard, and the company engaged in terpsichorean exercises, which were kept up without intermission until 12 o'clock. Dancing was then temporarily suspended, and they adjourned to the dining room to replenish the inner man with an elegant spread, prepared by host Eagle, to which ample justice was done. After the good things had been disposed of dancing was resumed, and kept up until 5 o'clock A. M., at which time they took their departure for home, and arrived in Toronto after daybreak, all well satisfied with the night's entertainment and enjoyment. The next day it was laughable to observe the operators in the office, for look where you might you would find one dozing. They were rather a seedy looking set that day, especially H. G., who works the Buffalo wire, and W., on the Oswego wire.

It is intended to get up another similar entertainment before the season is over. This one was gotten up by the employes of the Grand Trunk Railroad and Dominion Telegraph Company. We are indebted to Messrs. Hart, Platt and Williams, despatchers of the Grand Trunk Railroad, and Woullard and Johnston, of the Dominion Telegraph Company, for the excellent arrangements which were made for our entertainment.

Owing to some misunderstanding the employes of the Montreal Telegraph Company failed to put in an appearance on the occasion. WAX.

Subscribe for and Preserve The Telegrapher.

TO THE EDITOR OF THE TELEGRAPHER.

I WOULD like to see every subscriber of this paper take interest enough in it to preserve every copy, and where there is a public library, to offer it for file. This might increase the subscription list, and, better than that, the public will have something to base its opinion upon, should it be asked to vote on the postal telegraph scheme. The public know little of the internal of the telegraphic system, and little think they have warm friends among the craft. OHIO.

Personals.

Mr. W. H. DUNWOODIE has resigned his position as operator in the Toronto office of the Dominion Telegraph Company, and accepted a position as operator and ticket agent at Port Hope, Ontario.

Mr. E. E. TONN, formerly of Brookville, Kansas, has accepted a position in the Junction City, Kansas, Western Union office.

The operators and clerks connected with the W. U. and A. & P. offices, Albany, N. Y., united in presenting to Mr. D. J. HARRIGAN, of the former office, upon the occasion of his marriage, a pair of elegant steel engravings, "Il Penseroso" and "L'Allegro," richly framed.

Mr. H. S. McCORMICK has resigned his position in the W. U. Albany office and removed to New York.

Mr. C. E. ARNOLD, late of the Lake George, N. Y., office, has accepted a position in the Albany office W. U. Company.

Humors of the Telegraph.

THE Chicago Tribune says: "The other day the busy Liberal candidate for gubernatorial honors in Indiana found it necessary, in his canvass, to ask by telegraph of a head railroad official that a train might take him up at a small station. An answer promptly came back, 'No one will stop for you.' Hendricks and his friends waxed exceeding wrath at this, as a decided snub, and made a change in their railroad programme. But the courteous official had really done all in his power by promising that train number one would meet the request made. Hendricks will next time know how to 'look out for number one'—rarely a lack in a politician."

The Telegraph.

By Cable.

TELEGRAPHIC COMMUNICATION INTERRUPTED BY STORM.

LONDON, Oct. 18.—The British telegraph wires are deranged, and communication interrupted to-day by severe storms.

THE TELEGRAPH CABLE TO AUSTRALIA IN OPERATION.

LONDON, Oct. 22.—The Australian telegraph line is completed, and communication is now open with Melbourne.

A despatch from that city, dated the 21st inst., is published this morning in London, but it contains nothing of importance.

SHAMEFUL CONDITION OF THE GOVERNMENT TELEGRAPH SERVICE IN SPAIN.

MADRID, Oct. 22.—In the Cortes, yesterday, Señor Pascual called attention to what he termed "the shameful condition of the telegraph service in Spain." He knew of cases in which despatches from Madrid were forty-eight hours in reaching Paris, and thirty six hours on the way to Barcelona. He wanted to know if the Government, which had charge of the telegraphs, was unable to do better, whether the business could not be transferred to private hands?

Foreign Telegraphic Notes.

THE manufacture of the duplicate French Atlantic and of the Great Western cables is steadily progressing; of the former about 700 miles are already coiled on board the Great Eastern, and the electrical condition of the cable is all that can be desired.

The new General Post-office in London is approaching completion, and steps are being energetically carried out for the transfer of the head telegraph station there; wires are being laid in every direction, and a large system of pneumatic pipes laid down.

The extension of the telegraph from Grahamstown to Coromandel, in New Zealand, is nearly completed.

A company has been formed for the construction of a telegraph cable from Rio de Janeiro to the River Plate. A recent report presented by the directors stated that the sea distance from Rio de Janeiro to Lobos Island, off Moletonado, at the mouth of the River Plate, is 1,260 miles, and a few more miles of cable will be required from the island to the main land. The shore once reached, a land line of 90 miles will establish communication with Monte Video. Monte Video is connected with Buenos Ayres by a cable, and from the Argentine capital a message can be sent quite across South America, the Andes included, to Valparaiso on the shores of the Pacific. The capital of the Rio Janeiro and River Plate Telegraph Company has been fixed at £600,000, and the work is to be pressed forward with vigor.

The director of the International Telegraph office at Berlin has been instructed by the Italian minister to communicate to all the governments and companies represented at the Telegraph Congress, held last winter at Rome, that, with the exception of Persia and Denmark, all the parties interested have ratified the convention.

The total number of messages forwarded from postal telegraph stations in the United Kingdom for the week ended October 5th, 1872, was 320,231—an increase over the corresponding week of last year of 46,932.

A memorandum from the London office of the Great Northern Telegraph Company states that the traffic receipts on the company's lines were as under, viz: China and Japan lines—August, 1872, 76,855 fr., against August, 1871, 55,912 fr. The Shanghai-Nagasaki line was opened on the 12th August, 1871. During August, 1872, the Hong-Kong-Shanghai line was interrupted fourteen days. European lines—September, 1872, 131,972 fr., against September, 1871, 98,820 fr. China and Japan lines—September, 1872, 98,490 fr., against September, 1871, 41,750 fr.

The Telegraph Cable between Brazil and Portugal.

As we stated last week, Baron de Itauna, the late Minister of Public Works, a few days before his death, accepted the proposal of Baron de Maua to lay a telegraph cable between Brazil and Europe, on a concession for twenty years. It would appear that Baron de Maua engages to have the cable at work at the end of 1874, and that it will run from some point of the Province of Pernambuco, via Madeira and St. Vincent, to Portugal, he having come to an understanding with the English companies holding the Portuguese concessions for cables between England and Portugal, the arrangements regarding which understanding were approved by the Minister of Agriculture. The decree is dated the 16th August. At the expiration of the twenty years the concessionary will have the use of the cable or cables for twenty years more, but without monopoly. If on January 1, 1885, the number of telegrams during the two previous years should have averaged daily 300, of 20 letters each, the concessionary may be required to lay a second cable. The charge per telegram of

twenty words may not exceed 140fr. from the coast of Brazil to that of Portugal, 125fr. to Madeira, and 80fr. to St. Vincent. If, on or after January 1, 1877, the daily average of the two preceding years should have been 150 telegrams of 20 letters, the rates must be reduced respectively to 120fr., 107fr., and 72fr. 50c. The Government will abate 20 per cent. from its rates for telegrams having to pass its lines to the cable. The concessionary may, before 1877, lay cables to the West Indies and Senegal, and may also lay cables along the coast to points authorized by the Government, should the concession of March 23, 1870, not be carried out. The Cuzco took to England Mr. Rieke, who is commissioned by the directory of the Platino-Brazilian Telegraph Company of Rio Janeiro to place the contract for laying the telegraph cable from Rio to the River Platte, the concession for which is now held by the company.—*The Railway News.*

A Continent Brought into the Telegraphic Circuit.

As is stated in the despatch from London, which is published in another column, the telegraphic connection with Australia is completed, and that continent is now included in the telegraphic circuit which is encompassing the earth. This is an important event, and worthy of especial notice, in view of the future of Australia. There is no doubt but that hereafter that country is destined to become the home of a great people, and to hold an important place in the community of nations. It is peopled already by an energetic and enterprising population, which is rapidly increasing in numbers and settling up the country.

A line of telegraph has recently been completed across the country, and most of the provinces have telegraph facilities of more or less extent, and the telegraph connection has recently been extended to the diamond fields of South Africa. The point of cable connection is at Port Darwin, and the connection is made through an extension of the Java cable. This connection was made once before, but the working of the cable was interrupted before it had fairly got into operation. At that time the land lines had not been completed, which probably was the reason why there has not been more expedition in repairing and restoring it.

Time and distance are, indeed, obliterated by the telegraph. The antipodes are our neighbors, and the events transpiring in those remote regions become known to us as soon as those which occur in our own country or immediate vicinity! The wildest imaginings of Eastern romancists are more than realized, and the fabled powers of the magician's wand are exceeded by actual performance in these later days. We have become so accustomed to these marvels that they excite scarcely a passing notice, but they are none the less wonderful notwithstanding.

We welcome Australia and its telegraphs to the telegraphic community of the world, and hope that the electric cord which binds her to us in the universal brotherhood may not again be severed.

The Proposition of Certain Resolutions.

At the request of a correspondent we print a communication, asking for a vote of the subscribers of THE TELEGRAPHER on certain resolutions, which he submits for their consideration. We assume no responsibility for this more than any other communication, and our readers are, of course, under no obligation to respond unless they choose to do so, and failure to respond does not commit them to any organization. We presume there will be few, if any, votes in the negative on these resolutions, and perhaps few will care to respond to them at all. We have no objection to receive any responses to these resolutions, and shall not publish such responses unless desired to do so. We do not ourselves exactly understand what our correspondent expects to accomplish by this, but hope that it may result beneficially. At all events, we give it the benefit of our circulation, and ballots are in order.

Retirement from Active Service of Mr. W. H. Abel.

On Saturday last Mr. W. H. ABEL, auditor of the Western Union Telegraph Company, sailed in the steamship Adriatic for Liverpool, and will proceed from thence to Egypt as soon as possible. He will probably be absent for a year. Mr. ABEL's health has been very much impaired for a long time past, and by the advice of his physician he has decided to pass some time in the south of Europe and in Africa, in the hope

that the change of climate may be beneficial to him. He has for years been suffering from a bronchial affection, which of late has assumed an acute form, and a release from the duties of the responsible position which he has held in the service of the Western Union Company had become absolutely necessary.

It is hoped that he may experience the relief and benefit which he seeks, and may return with greatly improved health to the duties of his office. He has the best wishes, not only of his late associates in the employ of the company but of all to whom he has become known during the many years of his telegraphic service, for his future good health and welcome return to home and friends.

New Patents.

For the week ending Sept. 7, 1872, and bearing that date.

No. 131,334.—RHEOTOME OR CIRCUIT DIRECTOR. Thomas A. Edison, Newark, N. J.

A polarized armature, attached to a lever working an escapement controlled by an electro-magnet, wound so that the currents of polarity are opposite to those ordinarily used on the line; such currents cause the lever to turn an arm which forms connection with various circuits.

1. The rheotome, formed of the arms *A* and conductor pins *i*, in combination with the magnet *d* and polarized armature, substantially as and for the purposes set forth.

2. The wire or conductor *s*, connecting the circuit pins *i* of the rheotome, in combination with the arm *A*, magnet *d*, and polarized armature, substantially as set forth.

No. 131,335.—PRINTING TELEGRAPH. Thomas A. Edison, Newark, N. J.

Two type wheels revolved by independent step by step mechanisms. To each is added an auxiliary lever and ratchet wheel. Motion of one wheel communicated through auxiliary to the other till the union point is reached.

Two type wheels separately revolved by a step by step motion, in combination with a separate lever or levers operated by the mechanism that is moving one type wheel to set the other type wheel, substantially as specified.

No. 131,336.—PRINTING TELEGRAPH. Thomas A. Edison, Newark, N. J.

Two type wheels with independent magnets. Spring cross-arms extend from each armature lever to the other; the vibration of one through the spring vibrates the other till the union point is reached and that wheel stopped, the spring being too weak to overcome the resistance of the union stop.

Two type wheels actuated by separate step by step movements, in combination with a spring arm or arms extending from one lever to the other, and a yielding union stop for each type wheel, substantially as set forth.

No. 131,337.—PRINTING TELEGRAPH. Thomas A. Edison, Newark, N. J.

Two type wheels on sleeve sliding on shaft; one to be printed from brought into place by levers attached to printing lever working against cogged wheels on the sleeve.

1. The notched wheels *o*, *s*, in combination with the type wheels *A*, *k*, and mechanism, substantially as set forth, for moving the type wheels or the printing pad or shield, to select the type wheel from which the impression is to be made, substantially as set forth.

2. Two type wheels, with the characters of one in line with the spaces between the characters on the other, and a step by step movement that is operative when the electric circuit is both closed and opened, in combination with the notched wheels *o* and *s*, and mechanism for selecting the type wheel to be printed from, substantially as set forth.

3. The conical faced notched wheels *o*, *s*, in combination with the inclined stops *q* and *r* and type wheels *A* and *k*, substantially as set forth.

4. The swinging levers *q* and *r*, actuated by the printing lever *v*, in combination with the type wheels *A* and *k* and notched wheels *o*, *s*, substantially as set forth.

5. The combination of two type wheels and a printing lever with mechanism moved by the printing lever, substantially as set forth, for printing from one type wheel when the type wheel circuit is open, and from the other when that circuit is closed, substantially as set forth.

6. A shifting movement derived from the printing lever, operating in one direction with a closed circuit and in the other direction with an open circuit, substantially as set forth.

No. 131,338.—PRINTING TELEGRAPH. Thomas A. Edison, Newark, N. J.

Two type wheels on same shaft; separate printing levers for each attached to armatures controlled by magnets in same circuit. One type wheel is in position for use when circuit is open, the other when closed. Printing lever of wheel not in use locked by a stud on lever taking against tooth of cog wheel on type wheel shaft; stud on lever in use takes between the teeth.

1. The wheels *rs*, *rt*, projections *r*, *rt*, and levers *mt*, *mt*, in combination with the type wheels *A* and *k*, substantially as set forth.

2. Two separate printing levers and their respective magnets in the same or branch circuits, in combination with two type wheels, positioned as specified, and mechanism substantially as set forth, for preventing an impression from one of the type wheels while the other is being printed from, substantially as set forth.

No. 131,341.—PRINTING TELEGRAPH INSTRUMENT. Thomas A. Edison, Newark, N. J.

Weight substituted for spring as retractile force on printing lever. Double or two-typed wheels on sleeve. Spaces in one opposite letters, which are shifted so as to print from either.

1. The printing lever and weight, in combination with the type wheel and an electro-magnet, for the purposes and as set forth.

2. The bolt *o*, notches *r*, and fork *s*, in combination with a type wheel or wheels having two ranges of figures or letters and the printing lever and stud *t*, as and for the purposes set forth.

3. The combination in one electric circuit of two or more type wheel magnets, and two or more printing magnets, and two or more weighted printing levers, substantially as set forth, whereby the printing will be effected by the same pulsation used to bring the type wheel to place, but only when the printing magnet has accumulated sufficient force to give a blow by the weighted printing levers, substantially as set forth.

Married.

HARRIGAN—WOODS.—In Albany, N. Y., on the 17th inst., at the Cathedral, by the Right Rev. Bishop Conroy, assisted by Fathers James Harrigan, of Canajoharie, and Nicholas J. Quinn, Mr. DANIEL J. HARRIGAN, operator in the W. U. Co.'s Albany office, to Miss MARGARET WOODS, also of Albany. No cards.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, OCTOBER 26, 1872.

Premiums and Commissions.

WE have decided to make a slight change in the terms of subscription for THE TELEGRAPHER. For the future the "Club terms" are done away with. But few subscriptions are now made in this way, and the club system is more trouble and annoyance to us, our agents and subscribers, than it amounts to. Single subscriptions will remain as before, at \$2 per year, payable in advance.

We shall not at present offer any long premium list, but will make the following premium propositions: For four subscriptions to THE TELEGRAPHER, at the regular subscription price for one year, we will send a copy of the paper free to the person sending us the subscriptions.

For ten new subscribers we will give, as a premium, PICKETT'S Memorial Bust of Prof. S. F. B. MORSE. This bust is what is termed cabinet size, and is finished after the style of the celebrated ROGEE'S groups, and is a superior work of art.

To those who may interest themselves in procuring subscriptions we will allow, in lieu of the above, for new subscribers, 20 per cent. upon the amount collected, which may be retained in cash, or we will send any books or instruments that may be desired for the amount of commission as a premium.

We trust that these propositions will meet with approval, and that the friends of the telegraphers' organ will at once use their best exertions to secure a handsome addition to our subscription list.

A Friendly Critic on The Telegrapher.

WE print, in another column, a communication which, in a friendly spirit, criticises the course of THE TELEGRAPHER in certain respects. Honest criticism is good and wholesome, and we do not claim to be always infallible in judgment. What we do claim is that we adopt such a policy in conducting the paper as we honestly believe to be right and just towards all concerned. We may be at fault, and we print the communication referred to with pleasure, as we shall any other criticism which may be written in a proper spirit. While reserving to ourselves the privilege of deciding ultimately what the proper policy of the paper shall be, we are at all times ready to listen to counsel, advice and criticism, and to give them due weight in making that decision.

Let us consider the criticisms of JUSTICE, and see whether he is altogether correct in his views of the policy which THE TELEGRAPHER has pursued. In the first place he says that the paper is at times unjust towards certain officials of the Western Union Telegraph Company, and "sometimes opposes the policy of that company without sufficient consideration of all sides of the question." It is true that we have occasionally been rather severe upon certain officials of that company, but we fail to see wherein we have been unjust towards them. As officials of the company they are to that extent public servants, and their ability, and the manner in which they discharge their duties, and treat those who are subordinate to them in the employ of the company, are fair subjects for consideration in the organ of the telegraphic fraternity. We hold that one of the higher officials of the company is utterly unfit for the position he occupies, and that his course has not been such as to entitle him to any consideration at our hands. He has made war upon this paper, and was at one time foolish enough to boast of his power and intention to destroy it within a certain time. We might overlook this, especially as time has shown his folly and imbecility, but his course in other respects is inimical to the interests of the fraternity, and he has given no evidence of either increase of wisdom or repentance. The other officials of the company whom it has been our duty to criticise occasionally, have, by their malevolence and stupidity in dealing with their subordinates and the business intrusted to them, merited even more severe castigation than they have received. We have no personal ill will towards them, and if they would relieve the telegraphic fraternity of their further

continuance in responsible positions, we would willingly, so far as THE TELEGRAPHER is concerned, allow them to sink into the obscurity in which they should properly be immersed.

As to opposing the policy of the Western Union Company without sufficient consideration, we must say that we fail to appreciate it. What is the policy of that company which we oppose? It is conceded to be the design and intention of its managers, if possible, to establish a telegraphic monopoly in this country centering, as far as possible, all telegraphic interests in that corporation. It is true we do oppose that policy, as we always have and always shall oppose any policy which looks to a telegraphic monopoly, either in the hands of a corporation or in a department of the Government. We consider it of the utmost importance that there should be free and unrestricted competition in telegraphy. The interests of the public who use the telegraph, and of the employes who work the telegraph, demand this, and we should be recreant to our trust if we did not oppose the monopolizing policy of that company.

We have also advocated, in the interests of the telegraphic fraternity, a different and more liberal treatment of the employes of the company generally, but this is a matter which can only be satisfactorily adjusted by mutual arrangement and concession; and until there is greater unanimity of feeling and concert of action among telegraphers themselves, it is not probable that much can be effected in that direction.

The attempt of the Western Union Company, through the PAGE patent, to subordinate to it all the other telegraph interests of the country, is a part of the plan to secure a telegraphic monopoly. We oppose it for this reason, and also because we regard that patent, in the shape in which it stands, as a wrong and outrage of no ordinary magnitude, and one which can never be carried into effect. THE TELEGRAPHER has been outspoken in regard to this patent, both before and since it became the property of the Western Union Company, and we are opposed to it *per se*, and not because it is now controlled by that company.

Our correspondent should remember that the Western Union Company of to-day is a creature of the Stock Exchange, with a constantly changing proprietary, and that it is not the Western Union Company of a few years ago, when its stock was held by large numbers of people for investment. In one day of the present week more than one third of its actual capital was sold at the Stock Exchange in this city to speculators, who hold it only until a turn in the market makes it advisable or compels them to dispose of it.

Against the Western Union Company we have no prejudice more than against any other telegraph corporation. Whatever is done in the name of that company deserving of commendation we commend freely, and when we oppose and criticise that or any other telegraph company, we do it because in our opinion justice and right require it. As we said at the commencement of this article, we do not claim infallibility of judgment, and, if we are wrong, are willing to be convinced of our error.

JUSTICE considers that we sometimes exhibit favoritism in the treatment of other telegraph companies, and cites the case recently decided against the Great Western Telegraph Company at Chicago, and the report of that decision in THE TELEGRAPHER, as an illustration. The report which we printed, and the only one which we had seen up to this week, was that telegraphed to the Associated Press, and this was printed *verbatim*, except in the omission of the "fraudulent" part of it. Knowing the *animus* of the Western Associated Press report, and in the absence of anything to show its correctness, we did tone down that part of it. We have within the present week seen the decision of the court, and it fully bears out the Press report. It discloses a condition of things not unusual in the organization of telegraph companies and enterprises, and which THE TELEGRAPHER has always denounced and opposed. The organization was made in such a way as to give the *bona fide* shareholders no control over their property, present or prospective, no knowledge of the contracts made in their name, or in the disposition of the funds contributed for carrying out the enterprise. We could enumerate a number of telegraphic enterprises which have been initiated and carried on, until the collapse came, in almost if not quite as scandalous a manner. THE TELEGRAPHER is

neither the approver or the accomplice of fraud, or afraid to speak out when circumstances require it.

We are glad that the *bona fide* stockholders of the Great Western Telegraph Company have an opportunity to acquire the control of their own property at last. We did not desire to commit THE TELEGRAPHER in what we were told was a squabble between the Western Union and a competing company, until we were assured of the facts. Now that we have them, in the decision as rendered by the court, we do not hesitate to characterize them as they deserve, and it is no excuse to say that the authors followed the bad precedents which had been made in previous telegraphic organizations.

These comments upon the communication of JUSTICE have already spun out to an unreasonable length, and we must bring them to a close. We only desire to set ourselves right in these various matters, and to show to our friends and correspondents that we are inclined to give their suggestions and opinions due weight.

To Friends of The Telegrapher.

WE desire to once more ask the coöperation of the friends of THE TELEGRAPHER in our efforts to improve the organ of the telegraphic fraternity of this country and make it worthy of them. We are constantly in receipt of letters from different sections of the country speaking in complimentary terms of the paper and its management, and recognising its importance and value. These are very encouraging and gratifying, and we hope always to deserve such commendation. There has not, however, been such a general response in the matter of subscriptions as we expected when we proposed to enlarge the paper on the commencement of the new year. Of late subscriptions have been rather slack, and we desire now to once more urge every person who believes it essential that the organ of the fraternity should prosper, to aid us by securing and forwarding to us additional subscriptions. The labor for each one will not be very great, and the result will do more to convince us that our labors are appreciated than any amount of praise. Practical appreciation is what we want and must have. Any person who believes that publishing a telegraphers' organ is an easy or lucrative business may readily be convinced of their error.

We have maintained the paper at much labor, and in so doing have not in all cases advanced our individual interests. We have believed that the maintenance of THE TELEGRAPHER was essential to the interest and welfare of the telegraphic fraternity. We still believe this, and are not disposed to abandon the task, onerous as it is; and in so doing we consider that we have the right to claim the earnest and effective coöperation of those whose cause we advocate.

Demoralization of the Government Telegraph Service in Spain.

THE attention of the public, and of members of Congress especially, who may be influenced to favor the project for a Government telegraph monopoly in this country, may profitably be given to the report of the demoralization of the telegraph service in Spain, which is exclusively controlled by the Spanish authorities. Such is "the shameful condition of the telegraphic service" in that country, in the language of Señor PASCUAL, that he called attention to it in the Cortes, and indicated a preference that it should be placed in private hands, as more likely to improve it, and do the telegraphing of the country satisfactorily. We may see from this what the condition of our own telegraph system would be likely to become if it should be confided to Government management. With a monopoly of the business, a removal of pecuniary responsibility, and the laxity and red tape which characterise official management of any business, the telegraph service would soon become a reproach and nuisance, and the change would be the more bitterly regretted, because once made there could be no restoration of the former telegraphic status.

We do not anticipate the success of the efforts which are being made to effect the transfer, and such notes of warning from countries where the Government telegraph system has long been in operation, cannot but have a powerful influence in preventing so disastrous a result.

WILLIAM UNGER,
MANUFACTURER OF
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has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

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throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

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These Instruments will work in any circuit, and their performance is guaranteed.

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" " " for striking large Bells.

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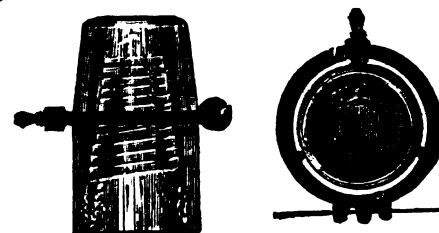
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Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

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As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

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Telegraph Companies, Superintendents and Line Builders is called to a

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OF UNEQUALLED QUALITY AND UNIFORM EXCELLENCE.

While great care and attention has been given to Instruments and Insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European Governments, only fit for fencing purposes. Many tons of such material now remain here, utterly unsaleable and unfit for use.

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We extract from the minute and specific details a few of the requirements of a

STANDARD GOVERNMENT WIRE.

1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable, and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be cooled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications a breaking strain of 1,260 pounds or No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

We now offer for sale this Uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market, to which this system of tests is uniformly applied.

We shall designate it by the Trade Mark,

CHESTER, A 1,

and our customers ordering it may be sure of receiving an article always uniform, and always the very best.

The capacity or endurance of No. 9 is 21 to 23 twists upon itself in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

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THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 39. The omission of the elongating process would increase the flexibility and the tenacity.

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A new combination, with Key on same base with the Bell, or
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The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 63.

New York, Saturday, November 2, 1872.

Whole No. 329

Original Articles.

A Fortnight on the Pacific Railroad.

On a beautiful Sunday morning in October the writer seated himself in a Pullman palace car at Omaha, for the purpose of taking a hurried trip over the Pacific Railroad, to witness the marvellous growth and development of the country, and revisit the scenes of early days.

Nearly a dozen years before I had started westward, but under far different circumstances. Then I was the owner of a No. 1 bull whip and the manager of four yoke of as lively steers as ever came under the yoke at sound of my gentle voice. Now I was comfortably seated, and each hour, day and night, passed over what before had been a day's journey. An hour's ride brought us to the famed Platte Valley, up whose broad, fertile bosom we travelled nearly four hundred miles. On the right hand are the Union Pacific wires—numbers one and two under control of the Atlantic and Pacific Telegraph Company. They are well put up on cross-arms, with flint glass insulators of the best quality, and supported by good pine and cedar poles about twenty feet in length. Twenty-five to thirty are used to the mile. Number one wire is used by the railroad company, and is divided into four sections, to correspond with the divisions of the road between Omaha and Ogden. Number two wire is used as a through wire between Chicago and Ogden by the A. & P. Co., but is hardly adequate for their largely increasing business. A third wire to Julesburg, thence new wires into Colorado, are contemplated next year. On the left side of the track are the Western Union wires—three in number. They are built in a very substantial manner, but in many places the poles have been reset so often as to leave nothing but short stubs, ten or twelve feet in height. This, however, is no serious objection on the plains. One of this company's wires is used as a through wire between Chicago and San Francisco, but unless the weather is excellent the entire distance, hard work and poor time is the result. The other two wires are worked in short sections, as it has been found impracticable to work more than one long circuit on the same poles in this climate. Western Union offices are from forty to eighty miles apart, and operators are, in most cases, repairers.

We made splendid time up the Platte Valley. Everywhere is seen evidence of thrift and comfort among the settlers, who are rapidly filling up this country. Thriving towns have sprung up at every railroad station, and the operators have not "got left" in the general prosperity. Nearly all own their comfortable little homes, and from a quarter to a full section of farming land in the vicinity. Success to the boys, many of whom are old time friends. May they grow wealthy and great with the country!

On the morning after leaving Omaha I woke up in "my little bed" opposite Julesburg, 375 miles west, within a stone's throw of the spot where, ten years ago, I had woke up in my ox wagon (just a month on the road), cold and stiff, after having forded the Platte river the day previous. A limited wardrobe and a slim chance for breakfast then made my situation not at all enviable. How different now the scene! Rising in a warm and comfortable palace sleeping car, to find my boots polished, and hot or cold water to wash in—a good breakfast cooking twenty-five miles away, which we sit down to in forty minutes. How wonderful the contrast! How great the march of civilization, as shown by this. Leaving Julesburg and the South Platte to the south, our course is up the Lodge Pole Creek, a distance of nearly one hundred miles. Traveling up the Lodge Pole our sight is feasted on numerous villages of prairie dogs and countless herds of antelope. Several shots from the baggage car put a band of the latter to rapid and beautiful flight.

After breakfast, at Sidney, all interest is centred in obtaining the first view of the Rocky Mountains. My practiced eye soon sights Long's Peak and adjacent ranges far to the left or south, their tops whitened with eternal snow, glistening in the morning sunlight. Still farther to the south is seen the majestic outlines of Pike's Peak, rearing its snow-crowned head high above the lesser beacons. Away in the north, dark colored and hazy, loom up the Black Hills.

At Hilldale station the operator has made the

platform very attractive with a menagerie and a mineralogical and botanical display. The former contains one prairie dog, quite pretty and tame. The latter is better represented, and consists of petrifications of various kinds, animals' bones, etc., artistically arranged in a circle, with a pretty little spray fountain in the centre. In the water are moss agates and rare stones in abundance. Near by are arranged some fine specimens of the cactus, prickly pear, and *artemesia gigantica*. Leaving Lodge Pole to the right we cross the divide to Crow Creek, on which Cheyenne is situated. Here is the beginning of the system of snow sheds that are to obstruct the vision at short intervals for two hundred miles.

At Cheyenne a good dinner awaits us. Mr. C. F. Annett, the courteous A. & P. manager, is ready with a welcome. I found time to run up town to the Western Union office, where I found two old friends—A. Snyder and Mr. Phippen—hard at work, but looking well fed and contented. The Western Union have two wires from this point to Denver, thence to Kansas City, which are used for eastern business when the Platte route is down.

Shortly after leaving Cheyenne we reach Sherman, at an elevation of 8,242 feet. A neat sign at the A. and P. office admonishes tourists to telegraph their friends "from the highest railroad point in the world." Near here, emblazoned on the bare walls of stupendous rocks, can be seen "S. T. 1860 X," and "Plautation Bitters;" evidence of an energy in advertising rarely witnessed. Two miles west is the Dale Creek Bridge, 125 feet high. After leaving the Black Hills we cross over the North Platte into the Bitter Creek land. This extends about 100 miles, and is as arid a desert as exists in Africa. The water is unfit to drink and poisonous. Stations are numerous, with one or two operators at each. The "Heathen Chinee" predominate as section men from here west—congenial company for the boys, and an inviting picture for your eastern city artist desirous of emigrating.

We reach Green River the second morning for breakfast. Near here are found moss agates and petrifications in unlimited quantities. Three hours' ride brings us to Carter Station, where the Government have a wire to Fort Bridger, twelve miles south. Not far west of Carter's can be seen the quaking ash poles of the old California line, stretching its tortuous path over the hills on each side of the railroad. Deserted now, like the old Pony Express and Overland Stage, they remind one tenderly of departed friends.

"There's no time like the old time."

We cross the Wahsatch Mountains at noon, and descend into the celebrated Echo Cañon, twenty-two miles long. At the mouth of the cañon I tarried two days with my old Overland Stage friends, prince among whom is Jim Bromley, for many years one of Beu Holliday's most indefatigable superintendents. Every old time telegrapher on the plains will remember Bromley and his penchant for a good yarn. To his friends, with the most sublime audacity, he would introduce me as the "Fust man that jerked lightning through Echo Canyon!" Of course this is an error, yet I relished the compliment keenly. Near here, on the Weber river, is Geo. W. Carleton, well known as the manager of Salt Lake office in early times. George is the owner of valuable coal mines, which, with the impetus mineral development has lately received in Utah, will yield him a fortune. At nightfall we arrived at Ogden. Next morning, in company with Manager Giles, of the A. and P., and Manager Morrison, of the "C. P.," I visited Salt Lake.

The Deseret Telegraph Company, of which Brigham Young is President, have lines connecting the northern and southern Mormon settlements with Salt Lake. Business is exchanged with the A. and P. Between Ogden and Salt Lake the Deseret and W. U. wires occupy the same poles, and, in fact, wherever it is convenient to be so, they are found on Deseret poles. In the east this would be considered contaminating, but western men are more matter of fact people, and study economy as well as interest. In the City of Salt Lake large handsome poles have been erected by the Deseret Company, on which compound wire is strung in an artistic manner. The Western Union uses some of these wires, as Brigham does not propose that his shade trees or sidewalks shall be injured by the mercenary gentile. Mr. A. Museer is superintendent

of the Deseret lines, and Mr. Dongall office manager. Both are pleasant and affable gentlemen, full of enterprise, and I understand make their lines pay.

The Western Union here is just now in a muddle in consequence of the removal of Mark Croxall, who has been manager for six or seven years. The primary cause is said to be his faith in the Latter Day Saints, and in that being offensive to the Federal officers. However this may be, it comes with bad grace after a knowledge of Croxall's religious proclivities since the date of his appointment. Mr. Ed. Conway, superintendent of the Western Union, is here, active and energetic as in the days of the Russian telegraph enterprise. He is acting manager of the office for the present, but anxiously waiting for a new appointment. Both companies have several branch offices, but I think they are not remunerative. The Deseret Company have their lines running into President Young's private office. B. Y. is the call, and I presume, when the faith of the saints waver, and they sigh for the flesh pots of Egypt, they may gain immediate inspiration from their spiritual head. Charles E. Pomeroy, a well known telegrapher in the east, is here filling a responsible position in the First National Bank. Pomeroy, it was said, had departed from the faith of his fathers, and was the husband of two or more wives. This he indignantly denied, and authorized me to make it as profane as I considered necessary, which I now do.

I remained in the City of the Saints several days, greatly impressed by the activity and energy displayed by the gentiles in their inroads upon the old Mormon regime of a bushel of wheat for a telegram, or a few pumpkins for admission into the theatre. The scene on Main street now, buying and selling mining stocks, reminds one of Broad street in its palmist days, and indeed it does not take a prophet to foretell the early ascendancy of gentile rule in this city and territory.

Eastward from Ogden to Laramie I fell in company with Mr. J. J. Dickey, of the Union Pacific lines, who is vigilant and untiring in looking after the interests of his company, making frequent trips over its entire length. Thence homeward my journey was rapid; arriving at Omaha I felt refreshed and invigorated, with a feeling of pride for the Pacific Railroad, that has made the desert to bloom, and brought distant hearts to beat in such close unison. MACK.

Proposed Telegraphic Route between Europe and America.

A COMMUNICATION, dated from the Forks of the Saskatchewan, from Captain W. F. Butler, author of the "Great Lone Land," urges a plan for the establishment of telegraphic communication between Europe and America via Behring's Straits. Looking at the points now reached by telegraphic enterprise in Asia and America, he divides the intervening distance into two portions—Fort Garry, in the new Canadian Province of Manitoba, and Nicolavsk, at the mouth of the Amoor River, in Eastern Asiatic Russia. These are distant along the proposed route about 5,000 miles. The first portion of this distance, from Fort Garry to Behring's Straits, is about 3,000 miles; the second, from Behring's Straits to the Amoor, is about 2,000 miles. Almost in a direct line from Fort Garry to the Straits of Behring three great river systems and four large lakes lay their lengths towards the northwest for 3,000 miles. These are the Saskatchewan, the Mackenzie and the Yukon Rivers, and the Lakes Manitoba, Winnipegosis, Athabaska and Great Slave. Captain Butler proposes to take advantage of this immense system of inland water by laying a river cable throughout such portions as come within the required line. After an examination of the details of the route on the American side, it is stated, "The advantages to be derived from this plan of utilizing the river systems of the northwest are many: 1. The facility with which a cable could be laid by the boats which at present navigate these rivers. 2. The cable would require to be only half the thickness and one quarter the weight of an ocean cable. 3. Security from fire and from the accidents caused by falling trees. 4. Ease with which a river cable could be undermanned, and facility for travel along its route, by canoe in summer, by dog train in winter. 5. Safety from ice by reason of depth of rivers, ice never exceeding five feet in thickness. 6. Absence of ill disposed Indians along the route. 7. The fact of

Hudson Bay stations already existing along the entire route, at intervals of about 100 or 150 miles apart, rendering unnecessary the establishment of additional stations on the American continent. 8. All the rivers, except the Saskatchewan for 300 miles, having their currents running towards the Straits of Behring. 9. The rivers are deep, free from rapids, and, being useless for commerce, from the ice-locked oceans which they seek, a cable would not be liable to accident from anchoring of ships. These rivers must, in fact, forever remain as they are at present—closed against commerce. The second section of the route is that between the Straits of Behring and the mouth of the Yukon River, about 2,000 miles. This distance may be divided into the Sea of Behring (200 miles), the River Anadyr (300 miles), the River Myan (150 miles), a Portage (50 miles), the River Penjina (150 miles), and the Sea of Okhotsk (700 miles); total, 1,600 to the mouth of the Amoor. The Sea of Behring is at all times free from icebergs, the currents setting into, not out of the Polar Ocean; its average depth is only 20 fathoms, and its bottom is composed of soft clay and mud. Telegraphic communication at present stops on the shores of the Pacific. Five thousand miles of ocean still forbid the laying of a cable between San Francisco and Japan, nevertheless the task is easy of fulfilment by the route and means here indicated."

Submarine Telegraphs.

SIR JAMES ANDERSON has published in a complete form the paper which he read in the month of June last in the Statistical Society, accompanied by a number of illustrations and diagrams, which give additional value and interest to the work. Few men have a higher claim to speak with authority on questions connected with submarine telegraphs than the author of this paper, and there is no shareholder in any of the existing companies who might not read with advantage the judicious observations which he makes on the increasing value of this description of property. The security of investments in submarine cables may now be considered as fully established, and they may be fairly regarded as constituting a perfectly sound investment. In 1861, when the report of the joint committee, to which Mr. George Seward gave such valuable assistance, was issued, the failures which had occurred were discouraging to many persons. But those who were associated with the great work from its earliest days persevered in their labors, and never faltered in their opinion that success, under proper management, was attainable. Of the eight thousand miles of cable which had then been lost the cause of the loss was distinctly attributable to defined causes, which might have been provided against. The confidence which Mr. Seward felt in the ultimate success of the undertakings, and which induced him, at a time when almost all the supporters of the project had fallen away, to keep intact the organization of the Atlantic Telegraph Company, was, as we all know, ultimately rewarded, until at the present day no one ventures to speak of difficulties or risks in connection with laying oceanic submarine cables. The present submarine cable, says Sir James Anderson, "Is not a hap-hazard idea, but one which has grown out of many failures and thousands of experiments—all the principles of manufacture and laying down have been established by great anxiety and reflection on the part of able men, who gave their energies to this kind of enterprise prior to 1865."

Sir James Anderson expresses a very decided opinion as to the superiority of the present form of cable over others of a lighter description, and which are recommended to the public mainly on the ground of economy in first cost. Such a cable, when once successfully laid, possesses in a marked degree the elements of durability.

"We have many reasons," he says, "to confirm the belief that a submarine cable, manufactured and laid with strict attention to all known principles, may be regarded as a substantial property, likely to last for any length of time—for there is no evidence whatever upon record which shows any decay of the insulating medium or copper conductor of a well manufactured cable—i. e., 'there is no decay inherent in the nature of a cable—all deterioration is external;' nor is there any experience to establish that the insulated copper wire will enjoy durability if unprotected with an external covering."

As bearing upon this question of the indestructibility of cables, a complete list is given of all the submarine cables in existence, with the dates at which they were laid, and the reader may judge for himself of the accuracy of the opinion as to their permanence and duration. The number of cables which have been laid is 213, and their total mileage is 45,735, and of this over 40,000 miles are now at work. Considering the paramount importance which it is that these cables should be maintained in efficient order, and for the convenience of the commerce of the world, Sir James Anderson suggests that the Government should either give the £10,000,000 of capital invested in this description of property a guarantee against competition which has no public good to serve, or take over the whole of the cables, as they have done with the land lines, "and, making them only self-supporting, give the public the full advantage the system is capable of affording."

Much useful information is given in the work respecting the capital, receipts and revenues of the various cable companies. We would recommend investors, present or prospective, to study the facts which are put forward in this paper, and we believe the result will be to create much additional confidence in the value of submarine cables as investments.—*The Railway News*,

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Those Western Union Glass Insulators Once More.

TO THE EDITOR OF THE TELEGRAPHER.

THERE has been little mention of late of the peculiar excellencies of General Superintendent Eckert's favorite glass insulators, and some of the readers of THE TELEGRAPHER may from that be led to suppose that they have been supplanted by some rational style of insulation. Such is not the case, however, as such of them as were unfortunate enough to be employed on the lines during the late storm were very feelingly convinced.

In order that our paper may not by its silence contribute to such a delusion, I have prepared the following statement of facts, which you are at liberty to make such use of as you shall deem advisable, and as likely to hasten the time when a little common sense in this matter of insulation shall take the place of prejudice and ignorance. It commenced to rain in Pittsburgh, Pa., on Tuesday night, the 22d October, and in Philadelphia the next night, and rained almost continually until Saturday morning, the 26th. Beginning at about noon of Wednesday, the Western Union wires west from Philadelphia began working very hard and with a great deal of escape, and as the storm extended eastward the difficulty of working was greatly increased, especially when it came east of Harrisburg. All Wednesday afternoon the wires were worked with much difficulty, with more escape between Philadelphia and Harrisburg than between the latter place and Pittsburgh. Business was delayed from one to two hours all Wednesday P. M., and on Thursday and Friday all day.

On Thursday the storm had extended to Baltimore and New York, and on that day there was so much escape upon the wires north that they could not be worked through from New York to Pittsburgh, and it became necessary to relay a considerable amount of Pittsburgh and New York business. All the repeaters in the Philadelphia office that were in order (4) were in use, and more were called for, but could not be furnished. On account of the great confusion incident to repairs of the office all the repeaters were not connected. At night one wire between New York and Pittsburgh had to be abandoned, in order to give No. 17, between New York and Washington, a repeater.

On Saturday morning the escape between New York and Philadelphia had become so great that Manager Brown, of the New York office, went over to Jersey City and cut sixteen wires out of that office, in order to lessen the escape sufficiently to enable them to be worked through. This made a perceptible change, but as it had ceased raining about an hour before the wires were cut out, it is probable that the improvement was due to that cause, and that the escape was from the defective insulation entirely.

Two of the wires west of Philadelphia could not be worked at all on account of the sympathy, or rain cross with other wires on the same cross-arm.

We shall probably now, for some months to come, enjoy frequent seasons of moisture, unless the fall and winter should be sufficiently severe to freeze up the wires and insulate them with frost, and the beauties and advantages of glass insulation will be as frequently demonstrated.

ONE OF THE SUFFERERS.

The Reported Demoralization of the Cuban Telegraph Service.

WASHINGTON, Oct. 28.

TO THE EDITOR OF THE TELEGRAPHER.

I NOTICE, in your issue of the 26th inst., a paragraph calling the attention of the public and members of Congress to the reported demoralization of the telegraph service in Spain under Government management.

As an anti-annexationist, may I ask that you will call the attention of the public and members of Congress to the demoralization and bad government said to exist in Cuba under the Spanish rule. The United States cannot, it seems to me, undertake with safety anything which Spain has found herself incompetent to manage.

INLAND.

Personals.

Mr. G. D. MILLS has been transferred from the Boston, Mass., to the New Orleans, La., Western Union office.

Mr. JULES GUTHRIE has been transferred from the New Orleans, La., to the Boston, Mass., Western Union office.

Mr. J. A. MOWATT has been transferred from the Berlin, Ontario, to the Hopkinton, N. Y., office of the Montreal Telegraph Co.

Mr. H. C. MARKS, of the Western Union Salt Lake, Utah, office, has resigned, and accepted a situation with the C. P. R. Co., at Sacramento, Cal.

Mr. J. R. BATTLE has been appointed assistant operator of the Key West, Florida, office of the International Ocean Telegraph Company.

Mr. HALL JUDSON has relieved Mr. STOVER, night operator of the Chicago and Iowa R. R. at Mount Morris, the latter going to Oregon Station, vice Mr. C. E. KIBBEY, transferred to the night office at Blunt Station.

Mr. L. R. SYKES, from Burlington, Iowa, has been added to the train despatcher's force at Aurora, Ill.

Mr. GEO. FIELD, of Rochelle, leaves the Chicago and Iowa line soon, having been appointed to a position in the general freight agent's department, which is soon to be removed to Chicago. His successor has not yet been appointed.

Mr. C. S. MALONEY has been promoted to the management of the Key West, Florida, office of the International Telegraph Co.

Mr. J. H. HANLEY has taken charge of the night office at Erie, Tenn., on the L. & N. and Gt. S. R. R.

Mr. J. S. CAMPBELL has been transferred from Paris, Tenn., to the Guthrie, Ky., office of the L. & N. and Gt. S. R. R.

Mr. P. E. PELOT has been transferred from Guthrie, Ky., to the Tennessee River Station, Tenn., on the L. & N. and Gt. S. R. R.

Mr. UTT takes the situation formerly filled by Mr. J. S. CAMPBELL, at Paris, Tenn., on the L. & N. and Gt. S. R. R.

Mr. R. MAINHART has been appointed operator at Tennessee Ridge, Tenn., on the L. & N. and Gt. S. R. R., vice Mr. J. T. PRENTICE, resigned.

The Telegraph.

By Cable.

PROMISED IMPROVEMENT OF THE TELEGRAPH SERVICE IN SPAIN.

MADRID, Oct. 28.—During the progress of the parliamentary proceedings in the Cortes to-day Señor Sorilla, President of the Cabinet Council, promised Señor Pascual, who complained several days since of the wretched condition of the Spanish telegraphic service, that the Government would introduce a bill authorizing 12,000,000 reals to be applied to its improvement and reconstruction.

CENSORSHIP OF CIPHER MESSAGES IN SPAIN.

MADRID, Oct. 28.—A proposition has been introduced in the Cortes to permit the use of cipher words in telegraph despatches, which has hitherto been forbidden under the censorship.

Foreign Telegraphic Notes.

ADVANCES recently received in London from Mr. Burton, at Buenos Ayres, state that he has recently added 386 miles of telegraph to the thousands already working through the provinces.

The successful laying of the Aspinwall and Jamaica cable completes the series of fifteen submarine telegraph cables contracted to be laid by the India Rubber, Gutta Percha and Telegraph Company for the West India and Panama Telegraph Company.

The number of messages transmitted from postal telegraph stations in the United Kingdom during the week ended Oct. 12, 1872, was 318,995—an increase of 51,275 on the corresponding week of last year.

Notice has been issued in London that the half yearly coupon No. 1, due 1st November next, on the Western Union Telegraph Company's seven per cent. first mortgage building bonds, will be paid at the fixed exchange of 4s. per dollar, equal to £7 per coupon (less income tax), by Messrs. Grant Brothers & Co.

The Mikado of Japan recently visited the telegraph office at Nagasaki, and proposed to exchange messages with the crowned heads of Europe. It was, however, found that the time occupied in transmission would be too long for him to wait, so none were sent.

The Russian telegraph land lines, connecting with the Nagasaki cable, are out of order through the overflowing of the Amoor river. At last advices the gap was 700 miles.

The Eastern Telegraph Company (Limited) announce a revision of tariff to India, China and Japan.

A contract has been made by Hooper's Telegraph Works with Messrs. C. Mitchell & Co., shipbuilders, Newcastle-on-Tyne, for the construction of a steamer specially designed for the laying of submarine telegraph cables. This will be the first cable steamer specially built, and it is contemplated that a considerable saving will be effected in the cost of laying future submarine cables by its use. The vessel will be capable of taking 3,000 to 4,000 miles of cable in one length, and will be employed in the submergence of the Great Western Telegraph Company's cable now in progress of manufacture by Hooper's Telegraph Works, and of which about 1,000 miles have passed the tests of Sir William Thomson and Professor Fleeming Jenkin, the engineers of the company.

PROBABLY few newspapers in large cities pay less for telegraphic despatches than those of Madrid, Spain. The whole telegraphic bill of the *España* in July, 1872, was less than \$60.

Mysterious Disappearance of a Telegraph Operator.

ON Saturday, October 19th, Mr. S. S. Cox, telegraph operator at the office of the Pullman Palace Car Company, No. 287 Broadway, in this city, left the office intending, as he said, to be absent but a short time to make a few small purchases. He did not return as expected, and up to the present time has not been heard from. All efforts to ascertain his whereabouts, or what has become of him, have been in vain, notwithstanding the efforts that have been made to trace him. Mr. Cox was a young man, and was formerly in charge of the Western Union office at Brunswick, N. J. What makes his disappearance more mysterious and unaccountable is the fact that his accounts were all found to be in perfect order, and no reason is known why he should voluntarily absent himself. He was to have been married in a short time, and the lady to whom he was engaged was unaware of any intention to absent himself, and has no knowledge of why he went away or where he has gone.

Faraday and Field.

Dr. GLADSTONE, in his "Memoir of Faraday," just republished here by the Harpers, tells the following story, which is worth reproducing:

"Inventors and promoters of useful inventions frequently benefited by the advice of Faraday, or by his generous help.

"A remarkable instance of this was told me by Cyrus W. Field. Near the commencement of his great enterprise, when he wished to unite the old and the new worlds by telegraphic cable, he sought the advice of the great electrician, and Faraday told him that he doubted the possibility of getting a message across the Atlantic. Mr. Field saw that this fatal objection must be settled at once, and begged Faraday to make the necessary experiments, offering to pay him properly for his services. The philosopher, however, declined all remuneration, but worked away at the question, and presently reported to Mr. Field: 'It can be done, but you will not get an instantaneous message.' 'How long will it take?' was the next inquiry. 'Oh, perhaps a second.' 'Well, that's quick enough for me,' was the conclusion of the American, and the enterprise was proceeded with."

Punctuation.

THOSE who use the telegraph for business or domestic communications would do well to "know their stops," as Mr. Hamlet remarked to his friend Guildenstern. There was no telegraph in the days of Divine William, but his "prophetic soul, his uncle," seems to have dreamt of it in his philosophy. A few days ago a physician of this town received a despatch which read thusly: "Do not come too late." Inasmuch as the son of Esculapius had received a letter only a few days previous to the receipt of the message, informing him that his professional services would shortly be required for a coming event, which had for some time been casting its shadow before, he had no difficulty in comprehending the object of the brief despatch. Hastily packing his valise the doctor made for the depot at a 2:17½ gait and arrived just in time for the Lightning Express. He reached his destination after a four hours' journey. There he found that the "event" had already happened, and the message which had hurried him to his patient was sent to stop him from coming. The sender of the despatch had written "Don't come—too late," and a thoughtless operator had made it one sentence. Whether the doctor is minus his travelling expenses, or has made a claim upon the telegraph company for damages, we have not heard. Punctuation is a wonderful thing.—*Burlington, Iowa, Hawk Eye.*

Novel Railroad Accident.

THE San Jose (Cal.) *Mercury* gives the following ludicrous account of a railroad accident near Mountain View, in that State: "A farmer in that vicinity had been out with his team gathering up a lot of telegraph wire, to be used in repairing his fences. This wire, of which there was a large quantity, he coiled and banded up as well as he was able, and loaded it on his wagon. Thus partly hauling and partly 'snaking' his load, he proceeded toward home. His route lay across the railroad track and it so happened that the down train was in sight, but having ample time he drove across the track, and at the distance of about a hundred feet halted to see the train pass. Now, it so happened that one line of the wire which was dragging behind had caught on a spike at the crossing, and, being loosely coiled, it paid itself out without attracting the attention of the farmer. When the engine struck it, however, he was forcibly reminded of its existence. His load began to string out for a moment, then a vagabond wire twisted round one of the bolsters, then came a sudden yank, as wagon and team, man and all, commenced a rapid crawfish movement toward the track. The engineer whistled down brakes, the levers were turned with a will, and the train stopped just as the wagon was about to be drawn under its wheels—but not before the wire had become almost inextricably wound up and entangled in the trucks and brakes. When that wire came off from the train, it was in pieces very unsuitable for fence building. No one was hurt, but the remarks of the train men can be imagined, as can also the astonishment of the passengers, who saw a two horse team going backward at a terrific rate without any visible cause."

A Good Joke on a Serious Subject.

OUR readers have doubtless seen the sad news of the drowning of M. Delaunay, director of the Paris Observatory. The telegram announcing the disaster was translated in the London papers thus:

"M. Delaunay was drowned at Cherbourg yesterday with three other persons—MM. Canot, Chavire and Bourrasque."

The names of these unfortunate gentlemen, if Anglicized, would be Messrs. Boat, Capsise and Squall, and the reader will guess that the French words were intended to express the circumstances rather than the victims of the catastrophe. The Paris papers, however, could not afford to laugh at the blunder, for it was only a fortnight previous that most of them contained the following interesting bit of intelligence:

"M. Stanley vient d'arriver a Marseilles, portant des nouvelles rassurantes de MM. Livingstone et Ujiji."

This being interpreted means: "Monsieur Stanley has arrived at Marseilles, bearing encouraging news of Messieurs Livingstone and Ujiji."

Death of Mr. Charles E. Perry.

INFORMATION has been received by the wife of Mr. CHARLES E. PERRY, United States Consul at Aspinwall, of his decease. No particulars accompanied the announcement of the event, but it was stated that his remains would be forwarded to New York by the steamer which would be due here about the first of November. A letter from Mr. PERRY to a friend in Albany, dated Aspinwall, Oct. 7, stated that he was sick, but evidently when that was written he did not anticipate any fatal result.

"I get off a sick bed to write you a few lines. I have had a very severe cold for the past two or three weeks, and it has finally brought me down with dysentery and fever. There has been a terrible epidemic raging at Carthage and other places up the coast, and every attack similar to mine is supposed to be a case by the blacks, but I do not think it has made its appearance here at all."

Mr. PERRY was formerly a telegraph operator, and was for some time a district superintendent of the Atlantic and Pacific Telegraph Company, with his headquarters at Albany, which was his home.

After retiring from the telegraph service Mr. PERRY was appointed Consul at Aspinwall, about four years ago. His duties have been arduous, and under very trying circumstances he has discharged them with marked ability and fidelity to the interests of this Government, and has been highly complimented for his official action by the State Department.

He leaves a wife and several children to mourn his decease, in which they will have the sympathy of his many telegraphic as well as other friends.

A Silly Hoax.

IN THE TELEGRAPHER for October 5th we announced the death of Mr. WM. B. RICE, operator of the Oregon and California R. R. line at Portland, Oregon. This information purported to come from Mr. FRANK J. LEAHY, another operator on the same line at Salem, Oregon, and we supposed it to be correct.

Mr. RICE writes to us, under date of October 18th, that he "still lives," and desires us to inform his friends that there must be a mistake somewhere.

We are rejoiced to learn that the announcement of Mr. RICE's decease was premature. Although not personally acquainted with him, he has long been a true friend and a valued correspondent of THE TELEGRAPHER, and we received the notice of his death with more than ordinary sorrow and regret. We fully concur in his hope that "it will be a long time before 'Webfoot' will be called upon to 'pass in his checks' to the cashier Death."

The hoax was a very silly one, and the first imposition of the character that we have suffered. We have forwarded to Mr. RICE the note which we received announcing his death, and hope that he may be able to identify the dastardly author and expose him.

The Albany (Oregon) *Register*, in noticing the announcement, says:

"MISTAKE.—In the N. Y. *Telegrapher* of October 5th appears a notice of the death of Wm. B. Rice, operator O. & C. R. R. at this city, of consumption. Mr. Rice is not only alive and well but has not enjoyed a 'sick spell' for many years. Whoever gave the above journal different information—Wm. B. authorizes us to say—is a 'liar and horse thief.'"

EDITING a newspaper is very much like raking a fire—every one thinks he can perform the operation better than the man who holds the poker.

New Patents.

For the week ending Sept. 7, 1872, and bearing that date.

No. 131,339.—PRINTING TELEGRAPH. Thomas A. Edison, Newark, N. J.

Two type wheels, two printing levers, each having its own magnets, both magnets in same circuit. One type wheel prints when circuit is closed, other when open. Arm on type wheel lever shaft closes circuit to the printing magnet for the type wheel in position to be printed from.

The circuit closing arm 4 5 and connections 3 4 to the respective magnets m, m' , in combination with the printing levers m, m' , type wheels l, l' , and actuating mechanism, substantially as set forth.

No. 131,340.—PRINTING TELEGRAPH. Thomas A. Edison, Newark, N. J.

Pulsator of transmitter arrested when the key is depressed, breaking circuit to type wheel magnet and bringing into action printing magnet.

1. The pulsator, acting to make and break the circuit to the printing magnet l , in combination with the arm 15, electro-magnet l , and connections for arresting the pulsator simultaneously with the stopping of the type wheel, substantially as set forth.

2. An electric circuit closed by the contact of the revolving arm 15 with the finger key stop 14, in combination with the type wheel and actuating mechanism, substantially as set forth.

3. The arm 19, moved by the escapement lever m , and acting to close the circuit to the printing magnet q , in combination with the pulsator q , magnet l and circuits, substantially as set forth.

No. 131,342.—PRINTING TELEGRAPH INSTRUMENT. Thomas A. Edison, Newark, N. J.

Two type wheels on a sliding sleeve attached to revolving shaft. Sleeve connected to armature of magnet in type wheel circuit, closed circuit bringing one wheel in position for printing, open circuit the other.

1. Two type wheels, sliding endwise of the shaft, in combination with an electro-magnet to move such type wheels in one direction, and a spring, or its equivalent, to return the type wheels to their former position, substantially as set forth.

2. An electro-magnet in the same circuit as the printing magnet, and operating to give end motion to two type wheels when the circuit is closed, in combination with a magnet in a separate circuit to give the impression, substantially as set forth.

No. 131,343.—TRANSMITTER AND CIRCUIT FOR PRINTING TELEGRAPH. Thomas A. Edison, Newark, N. J.

Pulsator revolved by friction. Instruments in any number of circuits controlled from one transmitter.

1. The pulsator c , driven by friction, in combination with the ranges of finger keys and the arms c_1, c_2 , substantially as and for the purposes set forth.

2. The revolving pulsator c in combination with the relay magnets and connections of the local and main line circuits, substantially as set forth, for actuating the printing telegraph instruments in their respective circuits, substantially as set forth.

3. The governor b' and flange 7 , in combination with the circuit connections to the magnets of the motor, substantially as and for the purposes set forth.

No. 131,344.—UNION STOP FOR PRINTING TELEGRAPH. Thomas A. Edison, Newark, N. J.

Type wheels brought into union by action of printing lever.

1. The wheel k and tooth 60, actuated by the printing lever m' , in combination with the type wheel l , wheel k , and pallets i , substantially as and for the purposes set forth.

2. Adjusting the type wheel l to the union point by the movement of the printing lever while the type wheel pallets are in the opposite position to that which they occupy when the type wheel is being printed from, substantially as set forth.

No. 131,377.—ELECTRO-MAGNETIC MOTOR. Adolph Schreiber Brooklyn, E. D. N. Y.; antedated September 9, 1872.

A combination of two sets of electro-magnets with each other and with a commutator, one set of electro-magnets being mounted on a stationary pin opposite the other set, which is mounted on a revolving shaft, on which is also secured the commutator in such a manner that when the currents of electricity are passed through both sets of electro-magnets, and the movable electro-magnets are so placed as to bring their poles opposite to the homonymous poles of the stationary electro-magnets, then, by the repulsion of the homonymous poles and by the attraction of the heteronymous poles, the movable electro-magnets are caused to revolve, and as the polarity of these electro-magnets is constantly changed by the commutator, a continuous revolving motion is imparted to the shaft carrying the movable electro-magnets.

1. The combination of two sets of electro-magnets with each other and with a commutator, one set of electro-magnets being mounted on a stationary pin opposite the other set, which is mounted on a revolving shaft, also carrying the commutator, substantially in the manner herein shown and described.

2. The method of regulating the speed of the machine by turning the stationary electro-magnets, substantially as set forth.

3. The combination of one single battery with two sets of electro-magnets, one stationary and the other movable, and with a commutator, substantially as described.

Recent British Patents.

No. 2,435.—B. Hunt, 1 Serle street, Lincoln's Inn, Middlesex. ELECTRIC PRINTING TELEGRAPH INSTRUMENTS, AND THE TRANSMISSION OF CURRENTS THEREBY. Dated September 16, 1871.

1. Arranging the parts of a printing telegraph instrument and the transmission of electric currents so as to effect the transmission of two separate and distinct messages simultaneously over one wire. 2. The arrangement of two printing apparatus in one instrument, and their magnetic attachment in one circuit. Suppose a positive electric current to be transmitted from the distant station, the armature of a bent lever connected to one of two electric magnets being drawn down, and its other end raised, throws a catch of an upper sliding plate from its retaining stop on a lower sliding plate, and causes the latter to act upon the former, so as to throw, by means of a pin, a bell crank lever towards a press, and feed a strip of paper towards the type wheel, where it is held by the press to receive the impression of the selected letter. With two instruments suitably connected the commutator of the one will transmit positive currents, and operate presses responding to positive currents in both, and the commutator of the other will transmit negative currents and operate presses responding to negative currents; thus, all the letters of one message are selected from type wheels by negative and of the other by positive electric pulsations.

Married.

WINSLOW—PALMER.—At Aurora, Ill., October 10th, by Rev. Dr. Forrester, Mr. FRANK E. WINSLOW, agent and operator of the Chicago and Iowa R. R. at Hinkley, to Miss IDA PALMER, daughter of Mr. L. Palmer, of Aurora.

THE Academy of Sciences of Bologna, Italy, offers a prize of 1,200 francs (\$240) for the best essay on the application of galvanism. The papers may be written in Latin, Italian or French, and must be submitted before June 30, 1874.

THE TELEGRAPHIC FRATERNITY.

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, NOVEMBER 2, 1872.

Premiums and Commissions.

WE have decided to make a slight change in the terms of subscription for THE TELEGRAPHIC FRATERNITY. For the future the "Club terms" are done away with. But few subscriptions are now made in this way, and the club system is more trouble and annoyance to us, our agents and subscribers, than it amounts to. Single subscriptions will remain as before, at \$2 per year, payable in advance.

We shall not at present offer any long premium list, but will make the following premium propositions: For four subscriptions to THE TELEGRAPHIC FRATERNITY, at the regular subscription price for one year, we will send a copy of the paper free to the person sending us the subscriptions.

For ten new subscribers we will give, as a premium, PICKETT'S *Memorial Bust* of Prof. S. F. B. MORSE. This bust is what is termed cabinet size, and is finished after the style of the celebrated ROGER'S groups, and is a superior work of art.

To those who may interest themselves in procuring subscriptions we will allow, in lieu of the above, for new subscribers, 20 per cent. upon the amount collected, which may be retained in cash, or we will send any books or instruments that may be desired for the amount of commission as a premium.

We trust that these propositions will meet with approval, and that the friends of the telegraphers' organ will at once use their best exertions to secure a handsome addition to our subscription list.

The Necessity for Increased Telegraphic Capacity.

It is evident that telegraphy has reached another stage in its marvellous progress and development. The most sanguine and far seeing of those who were engaged in introducing and developing the electric telegraph, failed to realize the universal use to which it would attain within the lifetime of the generation that witnessed its practical development and introduction. It has already become the means and agency familiarly and constantly employed by all classes of people in the daily routine and exigencies of business and social intercourse. In this country there are comparatively few, especially in the more populous localities, who do not with more or less frequency avail themselves of the facilities which it affords. As a consequence the business has become wonderfully developed, and the demand for telegraphic service has become so great as to employ to the utmost the facilities afforded; and this demand is increasing day by day, to an extent which is taxing the enterprise and ingenuity of telegraph managers to provide for. The number of wires and offices, not only on the principal routes between great cities and business centres, but also on the less important lines of communication, have been increased, and are increasing from year to year, and there seems to be practically no limit to the demand for this increase.

It has become a serious question how this demand is to be met and provided for. It is evident that we cannot go on forever adding to the number of wires which already stretch in all directions over nearly the whole of our settled territory. In Great Britain, and in other countries though to a less extent, this question is pressing upon those to whom is confided the management of the telegraphs. Originally it was considered almost a miracle that twenty, thirty or forty words a minute could be transmitted between distant points, and it was supposed that the condensation which the comparatively costly nature of telegraphing imposed, would limit the amount of business to the capacity or less than the capacity of the lines which might easily be constructed. But there is an irresistible tendency to a cheapening of the service, and at the same time the world has grown richer and pays less heed to expenditures which produce such important results. These two considerations have negated all the calculations based upon the reasoning which, at the time, seemed to be perfectly logical and reliable.

We are now confronted with this constantly augmenting demand for telegraphic service, and the limit which, under previously existing conditions, seems likely soon to be reached in the means of meeting and satisfying it. The inventive and scientific genius of the world is considering the problem and seeking for its solution. There appears to be but one way of solving it—it is in increasing the capacity of the instruments for the transmission of communications. It has long been known that there is practically no limit to the capacity of the wires for rapidity in the transmission of electrical signals.

The duplex instrument of Mr. STEARNS, whereby one wire is made to do the work hitherto only possible, or nearly so, on two, is an important advance towards the desired end. In this country the Western Union Telegraph Company has by purchase monopolized this invention, and is introducing it upon its more busy and important wires to its great advantage. It has fully realized the anticipations of its inventor, and he has had the great satisfaction of seeing its value and importance acknowledged by the very telegraph officials who scoffed at it as valueless, or of little value, when first introduced.

But this improvement, important and effective as it is, only partially meets the difficulty. It may for a time relieve the necessities of the company which has purchased it, but something even more effective is imperatively required. The capacity of the instruments must be not only doubled, but much more largely increased. Automatic telegraphy is by many believed to be the only adequate and final means by which the necessary relief can be afforded. In England the system of WHEATSTONE is used upon some of the postal telegraph lines, and although the speed of transmission is understood to be limited to from seventy to ninety words per minute, it is regarded as a most valuable adjunct to the ordinary facilities. It is hardly necessary to inform American telegraphers that this rate of transmission is equalled by the duplex, and that if this be all that can be accomplished by automatic telegraphy, it has little to recommend it. In this country the Automatic Telegraph Company, with the system of Mr. LITTLE, and the inventions of others, has been for some time engaged in developing an automatic telegraph system which is claimed to exceed anything heretofore known in telegraphy. This system has not yet been brought into public service, but most astonishing results are said to have been obtained in private tests. Three hundred words per minute are said to have been very recently transmitted between Charleston, S. C., and Philadelphia, and much greater speed obtained between Washington and this city.

We have never questioned the *speed* which may be obtained by the automatic telegraph, though we believe that in practical every day service it will not be found practicable to work the lines and instruments at the highest rate which has been repeatedly reached in experimental trials. The calculations of some of the most enthusiastic partisans of automatic telegraphy as to the *cost* of working this system we have questioned, and we still think with good reason. The opening of the automatic lines to public service will soon decide the correctness of the differing views and assertions on this subject.

While we do not believe that either the automatic system or the duplex instrument are destined to supersede the telegraphic methods previously in universal use, we regard it as assured that they are, in the future, to play a most important part in telegraphic service. Every urgent necessity eventually produces the means by which it is to be satisfied, and this will undoubtedly be the case in telegraphy. If the systems now claiming recognition should, on trial, be found inadequate, we have no doubt but that in due time the required solution of the problem will be found. That the capacity of telegraph instruments and systems must be increased, in view of the impracticability of indefinitely increasing the number of wires, is already fully demonstrated, as is also the fact that, however much the capacity may be developed, there will be plenty of employment and use for them.

We have heard it stated that some telegraphers are opposed to the development of improved telegraphic systems, for fear that such increased capacity would reduce the demand for and compensation of telegraphic service. It is true that the statements and calculations which have at times been published by advocates of an

automatic telegraph system have given some ground for such an impression. It is, however, a very erroneous and short sighted view to take of the matter. There will, under any system, be a demand for all the properly qualified telegraphic service that is likely to be available, and the higher the class of service required the better it must be paid. There is, therefore, no cause for any such apprehension on the part of telegraph operators, and their opposition, in any event, will not seriously retard a development which the interests and necessities of the public imperatively demand.

An Elegant and Costly Set of Morse Telegraph Instruments.

Messrs. L. G. TILLOTSON & Co. have just completed the most elegant and costly set of MORSE telegraph instruments ever manufactured in this country, and, so far as we are informed, in any other country. They were made for presentation to a high foreign official, and no labor and expense has been spared to make them superior to anything in this line ever before produced.

The set consists of a relay, register and key, on an ebony base, of the most costly description, which is highly polished. The relay, register and key are all of the most beautiful workmanship, and all the parts except the magnets are made of solid sterling silver. The register is of the well known TILLOTSON pattern, which was awarded the first premium at the American Institute Exhibition of 1867—the magnets cased with polished hard rubber casing, which sets off well the rest of the instruments. The paper reel, which is also of solid silver, is on a solid silver base and standard. The standard is surmounted by a silver statuette of Fame, sounding his trumpet. On the four sides of the standard are appropriate figures, also made of silver, representing the four seasons. The trumpet of Fame and the ornamentation of the other figures is of gold. The silver work of the entire set is elegantly burnished and artistically and appropriately chased. This set of instruments cost \$2,500, and the official for whom they are intended can rest assured of being the possessor of a set of telegraph instruments which for excellence and beauty, and value of material, design and finish, have not their counterpart anywhere.

The design and execution of this set of instruments reflects much credit upon TILLOTSON & Co., and cannot fail to add to their already excellent reputation. They can be seen at their store, No. 8 Dey street, for a few days, before being forwarded to their destination, and all who desire to inspect them will be cordially welcomed. They will well repay inspection, and telegraphers especially will be gratified with an illustration of the elegance and artistic beauty of which the ordinary instruments of their every-day use are susceptible. We would advise all who can do so to call and see them.

Modern Practice of the Electric Telegraph.

THIS work seems to be in increased rather than diminished demand, notwithstanding the length of time which it has been before the public. Mr. POPE rendered a very important service to the telegraphic fraternity when he prepared this valuable text-book, and one which they have not been slow to recognize. The publisher, Mr. VAN NOSTRAND, has just brought out the *Seventh Edition*, the previous editions having been completely exhausted.

Modern Practice met a necessity which had long existed for a reliable telegraphic text-book, adapted to the comprehension of those who were not familiar with electrical science, and the author has done his work very thoroughly and conscientiously.

We will forward the book to those who may desire to order it through us, postpaid, on receipt of the price, \$2.

An indomitable German savan has solved the aurora borealis problem in a manner which must satisfy every one disposed to listen to reason. He says, lucidly, "that the molecules of which the aurora is composed are stratified by a peculiar action of the particles on each other, causing the waves of vibration to elongate elliptically and to contract on their own orbits laterally, producing a scintillating corruscation which is in turn absorbed and then dispersed." How simple it is, and yet we never should have suspected it was accomplished in this way.

"Extending the shop front into the newspaper" is the last definition for advertising.

WILLIAM UNGER,
MANUFACTURER OF
TELEGRAPH INSTRUMENTS,
LIGHT MACHINERY,
MODELS, &c.
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MANUFACTURER OF
TELEGRAPH OFFICE WIRES
OF ALL DESCRIPTIONS,
PROVIDENCE, R. I.

With improved facilities for the manufacture of BRAIDED LINEN or COTTON COVERED OFFICE WIRE, either plain or paraffined, I am now prepared to offer to purchasers a SUPERIOR ARTICLE, in any quantity, on the most reasonable terms.
The Gold and Stock, and the American District Telegraph Companies have been supplied from my works with the larger part of the office wire used by them.
SEND FOR SAMPLE CARD.
For further information address as above, or
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MAGNETO-ELECTRIC ALPHABETICAL DIAL TELEGRAPH,
FOR
RAILROADS, GAS COMPANIES AND PRIVATE BUSINESS PURPOSES GENERALLY.
MANUFACTURED BY
HOWARD WATCH AND CLOCK CO.
E. HOWARD, & CO., Proprietors.
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This Instrument is offered to the public as the oldest, most rapid, and best.

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in the world.
It has already been extensively adopted, and has invariably given entire satisfaction.
They also manufacture and put up
THE ELECTRO-MAGNETIC WATCH CLOCK,
which is the best watchman's time recorder in the world. Also,
ELECTRIC AND CONTROLLED CLOCKS
of all kinds,
CHRONOGRAPHS,
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OF ALL KINDS.
All instruments and work from this establishment guaranteed to give satisfaction.

16,000 MILES
OF
"JOHNSON'S" WIRE
USED BY THE
TELEGRAPHS OF THE UNITED STATES
DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,
MANCHESTER, ENGLAND.
Their Works are the Largest in the World.

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

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This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.
A large stock always on hand and for sale at the lowest market prices—both free and in bond.

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THIS SYSTEM OF
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WITH A CENTRAL OFFICE,
OR
UPON THE AUTOMATIC PLAN,
is now in operation in the following Cities, to which reference is made for evidence of its great

SUPERIORITY, VALUE
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UNIFORM RELIABILITY.

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Boston, Mass.,
Bridgeport, Conn.,
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Baltimore, Md.,
Chicago, Ill.,
Cincinnati, Ohio,
Columbus, Ohio,
Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
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The Distinctive Features of these Systems of

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ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only **PERFECT, COMPLETE** and **RELIABLE** System
OF
FIRE ALARM TELEGRAPH
IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM AND POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. **GAMEWELL & CO.** are the owners of the original **FARMER & CHANNING PATENTS**, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

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has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE
PRESS

throughout the **UNITED STATES** and **CANADA.**

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure **ANY POSSIBLE IMPROVEMENT** which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the **UNITED STATES** and the **DOMINION OF CANADA,**

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but that, in every community where it has been introduced for any considerable length of time, they have been enormous, **THERE CAN BE NO QUESTION.**

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A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

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 BUNNELL'S PATENT REPEATER.

These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

JONES' LOCK SWITCH-BOARD,

a most compact and reliable Switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

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KERITE,

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COMPOUND RUBBER COVERED WIRE.

SUBTERRANEAN & AERIAL WIRES,

OF THE

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We are now prepared to furnish, after an experience of three years, an Insulated Wire, which can be buried in the earth or exposed to rain and sun, or to the vapor of acids, without injury. Professor SILLIMAN, who has exposed it to the most destructive agencies, finds that it remains uninjured in an atmosphere of ozone, which would destroy gutta-percha in a few hours. It exceeds glass or any other known substance as a non-conductor.

We have made special arrangements to furnish this article for office purposes at a reduced rate.

ALSO, TO FURNISH

IRON CLAD CABLES,

of the usual size, with KERITE COVER, believing that it will exceed, in insulation for submarine purposes, ANYTHING HITHERTO MANUFACTURED.

We shall be happy to furnish estimates for any amount and size of cable, which will be found to compete with any other construction, both in quality and price.

We manufacture the Genuine ELECTROPOION BATTERY, with Patent Platina Connection, introduced by us eight years since; also, THE ALPHABETICAL OR DIAL TELEGRAPH, now extensively used in this and other cities for private lines, being easily and quickly learned by any one.

We offer for sale, among other novelties, a SOUNDER that will work practically with a single DANIELL cell, a BATTERY that does not require to be taken down but once a year, and the very best MAIN LINE SOUNDERS made.

Our CATALOGUE, embracing a large amount of new matter and description, is now ready for distribution.

A MERICAN COMPOUND
 TELEGRAPH LINE WIRE
 COPPER FOR
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 STEEL FOR
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The superiority of the COMPOUND TELEGRAPH WIRE, compared with iron, consists in its LIGHTNESS, reducing by over fifty per cent. the number of poles and insulators required;

Relative TENSILE STRENGTH, homogeneity and elasticity—decreasing the liability to breakage from cold weather, sleet, etc.;

CONDUCTIVITY—insuring great improvement in the working of lines in any condition of the weather;

And in its DURABILITY, which greatly exceeds that of the best galvanized iron wire;

Altogether resulting in a very great reduction in the cost of maintaining and working telegraph lines, while, at the same time, insuring

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THE TELEGRAPH SUPPLY & MANU-
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INCORPORATED UNDER THE LAWS OF OHIO,

SUCCESSORS TO

HICKS & SHAWK,

AND TO

THE AUTOMATIC FIRE ALARM CO., of Ohio,

offer to the trade and to consumers generally, the best quality of TELEGRAPH SUPPLY GOODS and MANUFACTURES.

This Company is organized with ample capital and facilities to meet promptly any demands on it of whatsoever nature. The finest assortment of Instruments in use in telegraphic practice kept constantly on hand.

Specialties made of

Fire Alarm Street Boxes—Improved Pattern.

These Instruments will work in any circuit, and their performance is guaranteed.

Fire Alarm Electro-Magnetic Engine House Instruments.

" " Mechanical " " "

" " " for striking large Bells.

CAUTION.—Parties desiring to purchase Improved Fire Alarm Telegraph Apparatus are respectfully requested to beware of representations made by any one who professes to show our system, while really exhibiting and vending another.

An egregious case of humbug of this sort has recently come to our knowledge, and the party thereto will be prosecuted.

Also, of Dial Instruments, Repeaters, Hotel Annunciators, &c. Several Novelties in preparation; among others

A NEW REPEATER, and a

MAGNETO-DIAL INSTRUMENT,

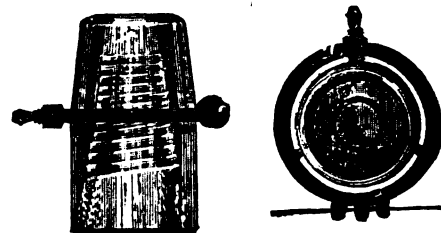
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CHESTER'S PATENT INSULATOR.



The undersigned solicits examination of some of the reasons which have induced him to recommend to his patrons and friends the Insulator exhibited above as the best and cheapest in use.

Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The Insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal.

As now manufactured, these Insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

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1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch.)

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4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be coiled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications a breaking strain of 1,260 pounds or No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

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The capacity or endurance of No. 9 is 21 to 23 TWISTS UPON ITSELF in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

COMPARATIVE AND COMPETITIVE TESTS

with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 99. The omission of the elongating process would increase the flexibility and the tenacity.

Although the wire has been proved IMMENSELY SUPERIOR to that commonly sold, its price will closely approximate to that of the inferior article.

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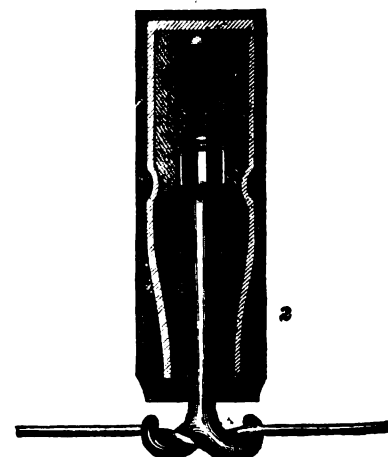
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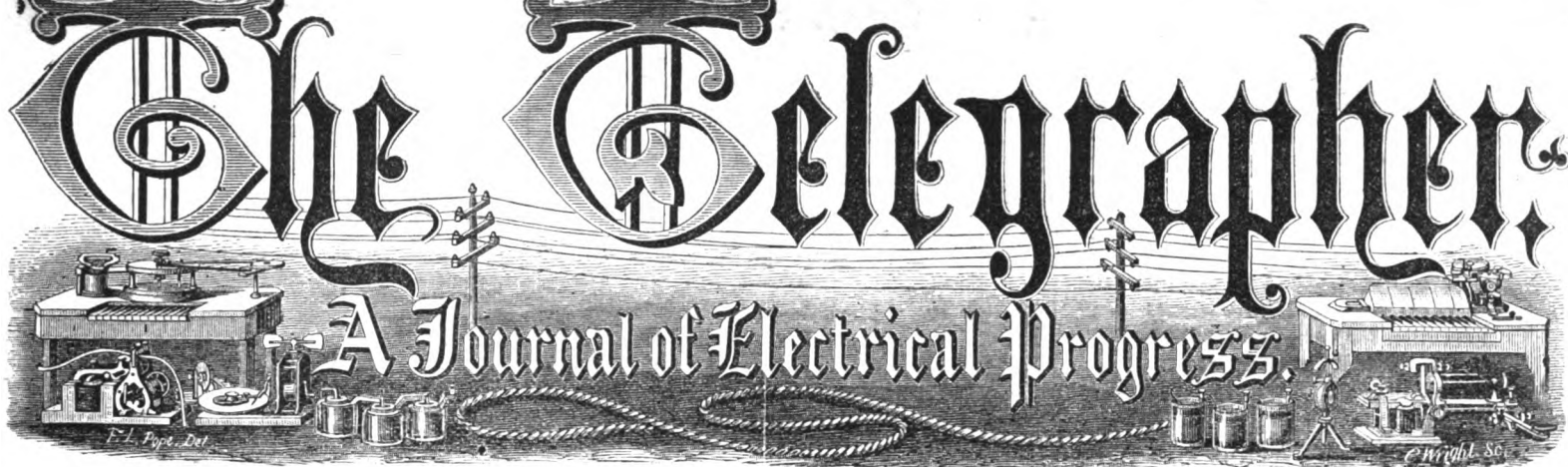
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The Telegrapher.

A Journal of Electrical Progress.



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New York, Saturday, November 9, 1872.

Whole No. 330

Original Articles.

Railroad Telegraphy in Pennsylvania.

SOME of the most perfectly constructed telegraph lines in the United States, both in a mechanical and electrical point of view, are to be found on a few of the leading railroads in Pennsylvania—especially upon the Pennsylvania Central, Philadelphia and Reading, and Lehigh Valley roads. A telegraph line of 250 miles of No. 9 wire, through a mountainous country, which works for weeks at a time without the necessity of altering the adjustment of a single relay, even during a long and heavy rain, lasting three or four days, is a phenomenon not by any means as common as it ought to be. In fact, it is one which few operators would be disposed to believe in unless they actually saw it; yet I had the pleasure of witnessing the operation of such a line only a few days since.

The line in question belongs to the Lehigh Valley Railroad, and extends from Philadelphia via Bethlehem, Mauch Chunk and Wilkesbarre, Pa., to Waverley, N. Y. It has been in operation about a year, and thus far seems to be in quite as good condition as when first put up. Mr. Homer A. Clute, the superintendent of this company's telegraph lines, shows a most commendable disposition to adopt all the latest improvements in telegraphy, and the result is shown by the above statement. The line in question is on Brooks insulators, and is carefully trimmed out, so that it touches nothing but insulators from one end to the other. The relays have their resistances adjusted to suit that of the line, and the helices are wound with copper wire of ninety-eight per cent. conductivity. By the use of the most improved form of Callaud battery, both for mains and locals, a perfectly even and steady current is maintained, and the line always works, rain or shine, as well as the most fastidious operator could possibly wish to have it. There are lines on the Reading road and on the Pennsylvania Central that are probably quite as good as this one—it is scarcely possible for them to be any better. When we compare these with the Western Union wires of about the same length, between New York and Washington, the inferiority of the latter is painfully apparent. Go into an office on the last mentioned route on a rainy night, and you will find at least half the wires have been opened in order to work the other half. One or two wires may possibly be working through, by the aid of 150 or 200 cups of Grove battery. Half a dozen more are coupled up with repeaters at Philadelphia, and making fifteen or twenty words a minute, but it is what the operators call a "dead drag." It is usually found most convenient to work the remainder "short," which, being interpreted, signifies cut them in two, and rewrite at some intermediate point. Yet if the managers of the Western Union Company should chance to read what is here written, both in regard to their own lines and Mr. Clute's, they would probably assert, not exactly that the writer hereof lies, but that his statements are, to say the least, characterized by conspicuous inexactness. It is easier to do that than to investigate the facts and much safer, owing to the fact that the latter are sometimes apt to conflict seriously with preconceived theories and opinions.

I spent a day very pleasantly looking over Mr. Clute's arrangements, and then crossed over to Williamsport, on the Philadelphia and Erie. This company are just now engaged in overhauling and rebuilding their whole telegraph system, and when the work is done it will compare favorably with anything of the kind in Pennsylvania or elsewhere. On the eastern division, of which Mr. Frank Thompson is superintendent, and H. R. Rhoads division operator and telegraph manager, the work is particularly well done. A new line of thirty-five foot poles is nearly finished on the east side of the road between Sunbury and Williamsport, carrying six wires—four railroad and two Western Union. These are on glass and pin insulators. An additional line of twenty-five foot poles, carrying two wires on Brooks insulators, is being built between the same points on the west side of the road. One of these will be used as a "wet weather wire," to work trains on the division, and the other will probably be used by the Empire Transportation Company. This two wire line is also being extended over the western division from Kane to Erie this fall, and in the spring the middle

division, between Kane and Renovo, and the eastern division, between Renovo and Williamsport, will be covered in the same way. When these improvements are completed the telegraphic facilities on this road will be first class.

The Catawissa Railroad, from Quakake Junction to Williamsport, has been leased by the Philadelphia and Reading Company, and the lines over that route will in a few days be opened for commercial business at Williamsport and intermediate stations. A fine office for the railroad, telegraph and express business, is being fitted up in the best business corner in the city, and a lively competition will be inaugurated. Heretofore there has been no other line than the Western Union at Williamsport, although it is one of the best paying points in Pennsylvania. The Reading Company's commercial telegraph business has always been remarkably well handled, and their wires are always kept in first class order, under the excellent management of Mr. Sellers, and they will doubtless in a short time get hold of a good slice of the business at Williamsport. This line also has an office at Danville, another place having quite a good business.

The Pennsylvania Central have just finished a new wire on Brooks insulators between Pittsburg and Altoona, which will shortly be extended through to Philadelphia. They already have one wire on Brooks from Pittsburg to Altoona, 117 miles, which has been working about a year, and like the Lehigh Valley line before referred to, works through, rain or shine, without change of adjustment, even when the weather is so bad that it is almost impossible to work lines on the common glass insulators at all. Both this road and the Philadelphia and Erie, after having been persuaded to replace their old Brooks insulators with glass, have, after two years' trial of the glass, given it up as a bad job, and gone back to the "old paraffine," to the great satisfaction of their dispatchers, operators and line men.

The Pennsylvania Company have quite an extensive manufactory of instruments and office fixtures at Altoona, under the supervision of Mr. Win. McCormick, where all the instruments used on their lines are manufactured. I have never seen more substantial or better working instruments than those turned out by this shop. I will endeavor, at some future time, to give a more particular account of this shop, as there are several points of interest that are worthy of note connected therewith.

F. L. P.

[From The Chicago Times.]

Telegraph Poles in the Streets.—The Question of their Removal.

WHILST there is so great a prevalence of self-glorification and exaltation by press, pulpit and people, over the grandeur of our rebuilding, it seems to be needful that some one should call attention to some of our short comings. One great and inexcusable defect, and one which is becoming daily and hourly more flagrant, is the system in vogue of distributing telegraph wires throughout the city. After so much money has been spent in architectural adornment, why is so great apathy exhibited at the ruthless manner in which the wires are made to disfigure streets and buildings? As one illustration among many which might be cited, look at the manner in which the new and beautiful Chamber of Commerce is already being defaced. Even now, before it was opened, two of its windows were garnished with a row of unsightly glass insulators, pinned to plain pieces of scantling on the window sill, and a number of wires strung on poles adjacent thereto tied to them, and entering the building under the windows. It seems bad enough that the streets should be studded with great poles bearing a multitude of wires, even when disposed with the utmost symmetry; but when there are three or four different systems of lines on as many different kinds of poles, unpainted and painted in different colors, with their wires crossing and interlacing in almost utter confusion, and, worst of all, piercing the very finest architectural fronts, then it seems as if the very stones would be constrained to cry out against the wanton disfigurement! Then, again, there are three or four systems of lines over the housetops; these are also dissimilarly distributed, many of them being on ungainly wooden crosses, which, on occasion, are made to incline at an angle above the cornice and shoot their several wires into a window somewhere in the regions below.

But this is not alone a question of esthetics, it is one of utility as well; for consider what must and does happen on the occurrence of a fire in a building having a number of taut wires strung in its front. How is it possible to manipulate ladders and fire escapes with celerity and safety? And if the fire prevails, the pole in its immediate proximity is burned, and then down come the wires into the street, breaking telegraphic communication, interrupting travel, and sometimes endangering life or limb. Nor is this all. Occasionally a heavy sleet storm loads down the lines with ice beyond what they are able to sustain, when wires and even poles are prostrated. From this cause the fire alarm and police telegraph wires have been disabled for days, thus endangering the destruction by fire of the very property they have assisted to deface. From this cause of breakage, with numerous others, the municipal lines have been so many times broken and spliced that their joints have become noticeably numerous, interposing serious obstruction to the well working of the system.

Now the telegraph is being utilized with wonderful swiftness. It is at this moment even entering almost every building, and not a few finds more than one person to whose service it ministers. With this rapid multiplication of wires for various uses the time must soon come, if it has not already, when dire necessity will compel a different course. It is not to the credit of the telegraphic profession in this country that the example set in Europe has not ere this been followed. There, in all large cities, the wires are distributed underground. Beyond all question this is the proper disposition to be made of them, as well in Chicago as in European cities, and it is only a question of time when the change must be made. Let us see if the present is not the auspicious moment to inaugurate the change.

1. The use of the wooden block pavement renders it exceedingly easy to find entry into the ground; no flagstones or rocky pavements have to be removed—only a few blocks alongside the curbstone, and across the intersecting streets, and a little earth. Then one row of planks, properly shaped, driven along the curb wall, and two rows across the street with a space left, say, two inches wide and three or four feet thick, affords ample space as well as the greatest security for the wires. Of course the wires must be insulated before being laid, but this process being technical need not be detailed here.

2. The grade of the streets in the burnt district having to be raised to this extent, the change is rendered much more feasible and inexpensive than if the streets were to remain unaltered.

3. Comparatively few buildings are fully completed; and as the proposed change in the method of distributing the wires will necessitate a change in the mode of ingress to buildings, this matter cannot too soon engage the attention of builders. The wires would be led from the street beneath the sidewalk, and when inside the building, should be concealed behind the plastering and under the floors—tubes and pockets being provided, somewhat as is practiced in the distribution of gas pipes.

The lines have already become so numerous in the city that breaks and contacts are of very frequent occurrence, and there is little doubt that but for parsimony on the one hand and impecuniosity on the other, the different parties owning and controlling them would ere this have voluntarily adopted the proper remedy.

The change need not be abrupt and precipitous, neither should it be universal throughout the territory of the city. The railroads which have entered the city, and those which will hereafter enter, do now, and probably will give right of way to telegraph lines; and so far it seems likely there will be no objection to their remaining, for some time to come above ground. But from the several termini of the railroads to the heart of the city, and elsewhere throughout the city wherever telegraph lines are required—whether municipal or metropolitan, public or private—municipal authority should enact and enforce the gradual abatement of this nuisance.

E. A. HILL.

Chicago, Oct. 15.

Electricity and steam the Archimedean levers which move the world.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Absurdity of the Pretensions of so-called Telegraph Institutes.—A Higher Grade of Education for Telegraphers Desirable and Practicable.

CLEVELAND, O., Oct. 29.

TO THE EDITOR OF THE TELEGRAPH.

I HAVE seen several articles in THE TELEGRAPH, from time to time, on "Plug Factories," and to-day my attention was transfixed by an advertisement in the *New York Herald*, offering to turn out operators at the modest and moderate rate of \$15 each.

By what process of grinding is this thing done? Is the man who professes to do this a mere ignoramus, unaware that there is something in the business beyond sending and receiving a message and making ordinary office connections; or is he a charlatan, practising upon an unwary and too easily deluded public?

Is there a Telegraph College in America where a competent knowledge of the science is taught? I am convinced that an institution that thoroughly mastered the subject would be as profitable as useful, but its grade should be very high. No knowledge that does not go to the reason of things is worthy the name, and a properly equipped establishment ought to be able to furnish the very highest order of instruction in the application of electricity to telegraphing.

I shall mention one or two things that have occurred to me in my lucubrations on this subject. It seems to me necessary that the ambitious student should be able to read at least one foreign language, and of any one I would prefer the French, as it is very rich in scientific literature, and its writers combine clearness and elegance in a greater degree than those of any other tongue. Of all the excellent manuals in English, none that I know of compare in depth with those of Dumonceau, Blavier, Schellen and other French electricians and scientists. Sabine's large work is very excellent, but, I am informed by Mr. Van Nostrand, is out of print—not a flattering commentary on English speaking telegraphers. In my opinion, also, mathematics should be insisted on, so far as at least to include the elements of plane trigonometry. If pursued to the taking in of the higher geometry, all the better.

Ohm hit on his famous formulas by analysis, and all deductions therefrom must be made by its aid. The various problems in derived circuits, the understanding of the principles of construction of all the various galvanometers, the use of the tables of sines, tangents, logarithms, etc., etc., all require this knowledge. And let no student be deterred by the apparently formidable character of what is here set forth; an average intelligence presupposed, all the rest is the prize of industry.

Our language, which forty years ago was literally poverty stricken in decent mathematical text-books, can now boast of many. A very remarkable instance of this may be found in the *Geometry and Trigonometry* of Chauveret, published by Lippincott. These are works of transcendent merit, and are unsurpassed in any language.

Another consideration suggests itself. If an operator who has the attainments I have alluded to leave telegraphing for another business, he will very often and very unexpectedly find them of the greatest practical utility—I speak from experience—while the ordinary routine of his daily duty teaches him nothing beyond.

I shall close these desultory reflections with a problem, which I hope may stimulate the curiosity of some of your younger readers. Its solution is usually given by the Calculus, but I append one by a method not usually found in American text-books, but which is readily intelligible to any one acquainted with equations of the second degree.

Problem.—Given, a number, n , of elements of a battery. Let the resistance of each element be R , and the resistance exterior to the battery be r . Suppose a number, b , of these elements to be grouped in quantity, forming, of course, but a single element. Now, if a number, a , of these elements be grouped in intensity, what is the combination that will give the maximum intensity?

The elementary formulas of Ohm lead at once to the expression:

$$J = \frac{abE}{aR + br} \quad (1)$$

$$\text{We have also } ab = n \quad (2)$$

Now, any fraction whose numerator is constant increases in value as its denominator diminishes, and (1) will therefore become a maximum when we have

$$aR + br = m, \text{ a minimum.} \quad (3)$$

Eliminating b between (2) and (3), and solving the resulting quadratic in a , we get

$$a = \frac{1}{2R} \times (m \pm \sqrt{m^2 - 4nRr}) \quad (4)$$

A simple inspection of this result at once shows that the least value m can have is $\sqrt{4nRr}$, because, if it be any less than this, the quantity under the radical becomes minus, and the expression for a , therefore,

imaginary. Substituting, then, this value of m in (4), we obtain, finally,

$$a = \sqrt{\frac{nR}{r}}; \text{ whence, easily, } b = \sqrt{\frac{nR}{r}}$$

And these values will be found to entail, necessarily, the relation

$$ab = br,$$

as the condition that (1) shall be a maximum.

G. B. HICKS.

Increase the Subscription List, and Power, and Influence of The Telegrapher.

TO THE EDITOR OF THE TELEGRAPH.

TALKING about increasing the interest in our paper, so that it may be enlarged and improved—have you ever personally solicited operators to become subscribers?

I presume their reasons for not subscribing appear to themselves sound and convincing, but it is really astounding to hear the remark, that even old telegraphers will make when approached on this subject: "The paper ain't worth it," "It has no influence;" "Can find hundreds of better papers for \$2 a year;" "Can't afford it," is a usual remark of spendthrifts.

If there are a hundred reasons why telegraphers should not support their paper in every way, there are two hundred reasons why they ought to. I admit the paper is not strong—and it never will be until it speaks for thousands instead of hundreds. What would the *N. Y. Tribune* be with but a tenth of its subscribers? You may say it is the brains of the management that builds up the subscription list; but I say there are dozens of better papers than the *Tribune* with not one quarter its list. The object of the subscribers of that paper was to make it their political organ and their mouthpiece, and the early as well as the later workers for that journal knew the material composing its management. He was ambitious and could be used, and by increasing the subscription list the friends of the various points advocated, simply won over most of the subscribers to think as the editor thought, by persistency of purpose. Our paper will have influence when it becomes the representative of the fraternity. Each additional subscriber makes a new reason why the editor should improve the paper, and helps to hasten the time when it will be worth the while of several first class men to give up all business but that of conducting the paper which is to be the exponent of the society for the improvement of the telegraph.

Some are "afraid" the managers of THE TELEGRAPH will make too good a thing out of it. For my part I hope they may do well, so well that it will be their highest worldly aim to stick to it to the end of their business career.

To be sure, there are hundreds of better newspapers for \$2 a year, but not one of them will help you as telegraphers. Without a union or organization of any kind THE TELEGRAPH will speak in tones of thunder when its list numbers all the brains in the fraternity—it will be listened to with respect and its influence will be felt. Enclosed find two dollars for another year.

KANSAS.

Cold Weather at the South.—Extension of the Southern Atlantic Lines.

NEW ORLEANS, LA., Oct. 31.

TO THE EDITOR OF THE TELEGRAPH.

WE are having quite a cold snap this morning, as a set-off to the delicious weather of the past week or two, and coal fires and overcoats, which were yesterday not dreamed of, are quite the rage. We have had a very dull business season so far, owing to low rivers, election excitement and other causes, but as crops are generally good, we hope for better times as soon as the political cauldron settles and Old Probabilities gives us a little more water.

In telegraph matters there is but one item of importance to report. W. L. Morris, the able financial agent of the Southern and Atlantic Telegraph Co., has arrived, and is now receiving subscriptions for the extension of that line from Mobile to this city. There are six gangs of line builders at work at present between Macon, Ga., and Mobile, and the line to the latter place will be completed by the 15th of November. Mr. Morris will also receive bids, while here, for the delivery and setting of poles on the route between here and Mobile—and as the company is pushing its work energetically and rapidly, it is confidently expected that the circuit between here and New York will be complete by January 20, 1873.

The Southern will connect at this point with the Pacific and Atlantic Company, thus giving the merchants and the public generally the benefit of two through routes to the north, west and east, in opposition to that cormorantish monopoly, the Western Union. Everybody here is pleased with the prospect.

Our people have been getting stirred up pretty lively of late in regard to railroad connections, and have, to a certain extent, thrown off the apathy which has characterized them for so long a time. We are now assured of an early railroad connection between this city and Houston, the great railroad centre of Texas, and also with Shreveport, connecting at that point with the Texas Pacific road, which, under the auspices of Mr. Thomas Scott, of the Pennsylvania Railroad, is making great strides. If things go on in this way New Orleans will become quite an important village yet.

DON CARADON.

Complimentary and Friendly Farewell to a Retiring Operator.

CHARLESTON, S. C., Oct. 29.

TO THE EDITOR OF THE TELEGRAPH.

MR. GEO. W. BELL, an old operator, and for a long time employed in the Western Union Telegraph office in this city, leaves the service of the company on the 1st of November, to engage in other business. By his genial disposition, and his many traits of kindness and gentlemanly character, he has won hosts of friends. May he prosper, and may success crown all his undertakings.

He is going to leave us;
We wish him success.
May fortune smile on him
As though it were press.

May he sell lots of apples
And plenty of pears,
And realize large profits,
And be free from all cares.

May he always have plenty,
And never know need,
And friends in abundance,
Who will prove friends indeed.

May his life in the future
Be happy and bright,
And at last may he land
In that Aevae of light.

J. L. H.

A Queer Office Message and Answer.

CANADA, Oct. 20.

TO THE EDITOR OF THE TELEGRAPH.

IN looking over the old messages of 1871, recently, we found the following queer office message and answer in the familiar handwriting of an operator who at the time worked here, and who was then known as a great rhymor and latter day poet—he being the author of the "Marriage Market," and a dozen other productions worthy of preservation by publication in THE TELEGRAPH. He was known on the wire as "Hy," and personally as "Truthful Joe."

"To 'Nd.' office.

"For mercy's sake answer 'Gn'! He's after you since half past ten. Besides, he's breaking us all day! Try and get him out of the way. "Sig. 'Ni' office."

By the timing it appears this was not got off for some time, which gave occasion for the following sharp reply:

"To 'Ni' office.

"Answered 'Gn.' some time ago. You must think us very slow. Your message is poetic to the letter! Answering your own calls would suit you better.

"Sig. 'Nd.' office."

OPQ.

Personals.

MR. WILLIAM H. HALL has resigned the management of the Pacific and Atlantic Telegraph Company in this city.

MR. CHARLES IRWIN, formerly of Philadelphia, Pa., has been appointed manager of the Pacific and Atlantic Telegraph Company, in this city, vice WM. H. HALL, resigned.

MR. W. E. SMITH, of the San Francisco, Cal., W. U. office, has been appointed manager of the San Diego, Cal., office of the same company.

The Telegraph.

By Cable.

PROPOSED PRIVATE TELEGRAPH COMPANY IN SPAIN.

MADRID, Oct. 31.—A private company has made a proposition to the Spanish Government to construct and maintain at its own expense lines of telegraph throughout the country.

REJOICING OVER THE COMPLETION OF THE AUSTRALIAN TELEGRAPH.

MELBOURNE, Nov. 4.—The completion of the Australian telegraph line is hailed with great joy in Melbourne, and a banquet to celebrate the event is to take place on the 15th inst.

The Proposed Government Telegraph Monopoly.

GOVERNMENT monopoly of the telegraph receives the following *quietus* in the columns of the *New York Financial Chronicle*:

"Telegraphs, like railroads, must be left to private enterprise. These great public enterprises require trained men, not political wire-pullers, to manage them with economy and success. Sixty thousand officials are, it is said, appointed by the Government now, and the nation cannot consent to make the number seventy thousand. We trust the mischievous scheme will not be pushed in Congress. The leading newspapers will not venture to brave the storm of public obloquy which would certainly be awakened by such an attempt to enlarge the means and temptations to political corruption. It is true that Governments abroad own telegraphs, but that is nothing to the purpose. Foreign Governments do many things which we cannot, dare not, must not do—things that require a centralization of power, and are incompatible with our freer institutions."

Another Government Telegraph Line that Don't Pay.

STATEMENT OF THE TELEGRAPHIC SYSTEM IN HOLLAND FOR 1871.

I. LINES.	
Length of lines in miles.....	1,939
Length of wire in miles.....	6,697
II. OFFICES.	
Offices open for home and international service.....	261
Of which were Government offices.....	129
Of railroad or private companies.....	132
Of these, in permanent service there were.....	3
Full day service.....	50
Limited service.....	208
	261
III. APPARATUS.	
Number of apparatuses in service:	
Morse system.....	294
Hughes system.....	21
	315
IV. PERSONNEL.	
Upper employés, and of the Central Administration.....	18
Number of office employés.....	611
Subaltern personnel.....	240
	875
V. MESSAGES.	
Interior service, messages sent.....	1,180,185
International service:	
Messages sent abroad.....	287,885
Received from abroad.....	299,265
Passing in transit from one frontier to the other.....	270,912
Total number of messages.....	2,038,247
VI. RECEIPTS.	
Product of home correspondence.....	\$147,187
Product of international correspondence.....	114,904
Total receipts.....	\$262,091
VII. EXPENSES.	
Extraordinary Budget:	
Construction of lines.....	\$28,079
Ordinary Budget:	
Expenses of operation and repairs of the lines and offices.....	355,502
Total expenses.....	\$383,581

It will be seen from the above statement that the excess of ordinary expenditures over receipts for the year was \$73,411, which, for less than 2,000 miles of line and 261 offices, is suggestive. This statement is commended to the consideration of the advocates of a cheap Government telegraph system for the United States.

Reply of Sir Charles Bright to Congratulatory Resolutions of the Panama Legislature.

SIR CHARLES BRIGHT, with date of 11th Oct., replied to the resolution of the Legislative Assembly of Panama, which was transmitted to him through President Neira, as follows:

"To His Excellency General Gabriel Neira.

"I have the honor to acknowledge the receipt of your telegraphic message of yesterday, communicating to me a resolution of the Legislative Assembly of the State of Panama, and to express my high appreciation for the resolution of the Assembly and the including of my name in it.

"I hope within a short time to be able to congratulate the State of Panama as being in telegraphic communication with Lima, Valparaiso and other cities of the Pacific Coast. "CHARLES BRIGHT."

The Telegraph in Central America.

MR. S. McNIDER has just signed a contract with the Government of Guatemala for the construction of telegraph lines which shall place the capital in communication with Salvador, the adjoining Republic, and with all the principal interior towns of Guatemala, and her two principal seaports, San Jose and Champerico. Mr. McNider will use in the construction of these lines the large Chester wire and insulators.

The Jamaica and Aspinwall Telegraph Cable.—A New Cable Contemplated.

ADVICES from Kingston, Jamaica, of October 26th, by steamer St. Thomas, at this port, state that the Colon cable has been successfully laid, but Sir Charles Bright has not yet handed it over to the West India and Panama Railroad Company. He is working it at present for the public with his own staff, at the rate of ten words for five dollars. It is reported that his account against the West India and Panama Telegraph Company amounts to \$675,000, and that until they comply with the terms of his contract he will hold possession of the Aspinwall cable. It is also stated that the telegraph company has not enough money to meet this demand at present. It is stated that their capital is something less than \$395,000, unless they raise money by the issue of new debentures.

A submarine cable is contemplated between the present landing place of the Colon cable at Jamaica and Bermuda, to connect with the line which is to be laid next year from England, with an extension to New York. This route will be much more preferable to business men and the press, as they will thereby prevent the objectionable supervision and censorship of Spanish officials in Cuba.

THE Boston Post tells us that "a noble colored man in Memphis successfully signaled danger ahead to an approaching train with his wife's red flannel petticoat." The circumstance confirms the *Courier-Journal* in the opinion that every man who lives in the neighborhood of a railroad ought to compel his wife to wear a red flannel petticoat.

Increase of Telegraph Rates.

By an agreement between the different companies, the tariff on messages between this city and Philadelphia has been increased from 25 and 2 to 30 and 2 cents. Also, all the 20 cent rates have been increased to 25 cents from the 1st instant. This is all there is of the report that a general increase of telegraph rates had been decided upon and was to be immediately inaugurated.

Foreign Telegraphic Notes.

Advices by mail, via San Francisco from Japan, of September 27th, state that telegraphic communication was complete from Yokohama to Nagasaki. A wire had been swung across the Straits of Simonoeki, to serve until the submarine cable was laid, which would be in a few days. By this means direct telegraphic communication had been established with Europe and America.

At Liskeard, Cornwall, during the severe thunder storm that passed over England a few weeks ago, the telegraph room of the Post-office there was set on fire by lightning. The coils and lightning conductor in a needle telegraph instrument were completely fused, and even the brass work was melted. The lightning passed on to a gas burner, scorched the pipe, and set fire to the gas. The room became enveloped in flames, which were soon extinguished, but telegraphic communication with the office was suspended for some hours.

A conference of newspaper proprietors at Melbourne, Australia, has recommended the Government to subsidize the new ocean cable, in order to obtain a reduction in the tariff on messages.

The Eastern Telegraph Company has determined, in consequence of its increasing business, to lay a duplicate cable from Falmouth to Lisbon, connected with either Corunna or Vigo.

The work of carrying the telegraph lines through the centre of Australia, from south to north, was performed single handed by South Australia.

The total number of messages forwarded from postal telegraph stations in the United Kingdom during the week ending October 19th, 1872, was 313,388—an increase over the corresponding week last year of 57,011.

The Cox Disappearance.

THE disappearance of Mr. S. S. Cox, telegraph operator at the office of the Pullman Palace Car Company, 287 Broadway in this city, was noticed in the last number of THE TELEGRAPHIC. No tidings have as yet been received from him either by his employers, his brothers, or the young lady in Philadelphia to whom he was engaged to be married. The superintendent of the company, however, has received a despatch from Mr. Robert Stuart, of Trenton, New Jersey, which inclines him to the belief that he has not been foully dealt with, as was feared. The despatch is as follows:

"I have received a telegram from Europe which, I think, is from Cox. It says he was carried away by a steamer, and will return by the next steamer."

If this be really from Mr. Cox, he will be home in a few days, and can give an account of his unexpected travels.

Marriage of a Telegrapher.

On Sunday, Oct. 27, Mr. George P. McAlevy, manager of the Western Union Telegraph, and agent of the St. Louis, Kansas City and Northern Railroad at Moberly, Mo., was married to Miss Mary Isabelle Chambers, of St. Joseph, the marriage taking place at the latter city. A local paper thus pleasantly speaks of the affair:

"There is no telling what railroad men won't do. They are lively, go-ahead boys, and just wade right into a city, capture some prize, and walk away with it, without so much as saying 'by your leave.' We had an illustration of this on Sunday. Mr. George P. McAlevy is the agent of the St. Louis, Kansas City and Northern Line at Moberly. He might have married in that place, but then he didn't want to. He came up to St. Joseph and was united in marriage to Miss Mary Isabelle Chambers, daughter of Mr. George P. Chambers. The ceremony was performed at the residence of the bride's father, at the time stated, by Rev. J. M. C. Breaker, pastor of the Fifth street Baptist Church. Quite a number of ladies and gentlemen were in attendance, and partook of a sumptuous repast, spread by the hospitable host. The bridal party left yesterday for their new home, carrying with them the best wishes of many friends."

Telegraphers' Insurance Association.

THE annual meeting of the Telegraphers' Insurance Association was held at the office of the Western Union Telegraph Company, 145 Broadway, on Friday evening, November 1st. Mr. A. S. BROWN was re-elected Treasurer, and Mr. D. R. DOWNER elected Secretary for the ensuing year.

We have, by direction of the meeting, been furnished with copies of the reports of the Secretary and Treasury of the Association for the past year, which will be published in full in the next week's issue of THE TELEGRAPHIC.

Telegraph Extension.—Completion of a Western Union Telegraph Line.

THE telegraph line of the Western Union Company along the Atchison and Nebraska Railroad, from this city to Lincoln, Neb., was completed on Wednesday, and the following congratulatory despatches passed between the Mayors of the two cities:

"ATCHISON, Oct. 30, 1872.

"To the Mayor of Lincoln, Neb.

"On behalf of the people of the 'Great Railroad Centre of Kansas,' united some time ago to the Capital of Nebraska by rail, I congratulate you to-day on the completion of another important enterprise, uniting the two cities, viz., the extension of the Western Union Telegraph Company's line, on the Atchison and Nebraska Railroad, from Atchison to Lincoln. May it unite us in stronger bonds of friendship.

"E. K. BLAIR, Mayor of Atchison."

To which the following reply was yesterday received:

"LINCOLN, Oct. 31, 1872.

"E. K. BLAIR, Mayor of Atchison.

"Owing to my absence from my office on the arrival of your message of the 30th inst. it did not reach me until this moment. The citizens of Lincoln reciprocate the congratulations extended to them by the citizens of Atchison, upon their union by direct lines of railroad and telegraph with our Capital City, and join them in the desire that the bonds of iron may be emblematic of the bonds of friendship that shall hereafter exist between these two enterprising cities of the West.

E. E. BROWN, Mayor."

--The Atchison (Kansas) Daily Champion.

New Patents.

For the week ending October 1, and bearing that date.

No. 131,878.—GALVANIC BATTERY. Henry Highton, Putney, England.

Uses cheap and highly oxidizable materials. Protosulphate of iron used with nitric acid to absorb nitric oxide fumes.

1. The use as positives of sulphur, the soluble sulphides, soluble salts, or compounds admitting of a higher state of oxidation, in the manner above described.

2. In the negative side of the battery the use of a tower of cinders or similar substances, freely permeable by the atmosphere, as above described.

3. The use with nitric acid of protosulphate of iron to absorb nitric oxide, as described.

4. The use of a substance in the positive part of the battery which will precipitate injurious soluble metallic salts, as described.

No. 131,886.—INK COMPOUND FOR TELEGRAPHIC AND OTHER PURPOSES. George Little, Rutherford Park, N. J.

Aniline in dry powder is heated with glycerine. If too thick water is added.

The ink compound made of the substances and in the manner specified.

For the Week ending October 15, and bearing that date.

No. 132,278.—ELECTROCAL TEMPERATURE SIGNAL. Webster Gillett, Ypsilanti, Mich.

A mercurial or metallic thermometer is caused to make contact and close a circuit at a prescribed limit of temperature in the usual way, so as to operate an electro-magnet, which, by means of rotating with a stationary disk, breaks the circuit in such a manner as to cause the spring armature to oscillate repeatedly, and, by a rod, to strike a bell at each return.

1. The circuit breaker J, consisting of the stationary disk c, oscillating disk b, spring strips M, N, platinum points e, f, and platinum strips N', as arranged in relation to and in combination with the armature F and electro-magnets O O, in the manner as and for purpose set forth.

2. The armature adjusting lever L, collars d, and yoke K, in combination with the section b of the circuit breaker J, in the manner as and for the purpose set forth.

Recent British Patents.

No. 2,759.—A. V. Newton, Chancery lane, Middlesex. IMPROVEMENTS IN ELECTRIC BATTERIES. Dated October 17, 1871.

The surface or carbon exposed to the action of the exciting fluid is enlarged, and certain chemical substances are submitted to the action of the exciting liquor.

No. 2,596.—T. Varley, 12 Barclay road, Leytonstone, Essex, and F. H. Varley, Mildmay Park Works, Stoke Newington, Middlesex. ELECTRIC TELEGRAPHS—PART APPLICABLE TO OTHER PURPOSES. Dated October 2, 1871.

The particular method of making contacts, and simple construction of key effecting complex combination of contacts. The method of controlling the magnetism developed in Electro-magnets, to maintain uniform magnetism in the relays, though the electric currents vary; the mode of marking the paper by pencils, and of keeping the point sharpened, and at an uniform distance from the paper; the method of governing the speed of moving trains of wheel work for telegraphs, applicable also to other machinery.

No. 81.—E. J. Harling, Wistbourne road, Barnsbury, Middlesex. TELEGRAPHIC APPARATUS. Dated January 10, 1872.

Employing, instead of the magnetic needle, a soft iron ball, either solid or hollow, or a ring, having a vertical or horizontal diaphragm of brass or other insulating substance placed therein. The ball or ring is placed between the arms of a permanent horseshoe magnet.

Born.

MOORE.—On Sept. 23d, to CHARLES MOORE, of Philadelphia, a daughter.

FALLS.—On Oct. 18th, to Z. P. FALLS, of Philadelphia, a fourteen pound boy.

Married.

MCALVEY—CHAMBERS.—At St. Joseph, Missouri, Sunday, Oct. 27th, by Rev. J. M. C. Breaker, Mr. GEORGE P. MCALVEY, of Moberly, Mo., to Miss MARY ISABELLE CHAMBERS, of St. Joseph.

CLEWELL—RHODES.—At Bethlehem, Pa., Oct. 17th, by Rev. Edmund De Schweinitz, Mr. O. A. CLEWELL, manager of the Bethlehem office of the Lehigh Valley Railroad, to Miss HATTIE RHODES, also of Bethlehem.

THE TELEGRAPHIC FRATERNITY.

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, NOVEMBER 9, 1872.

Premiums and Commissions.

We have decided to make a slight change in the terms of subscription for *THE TELEGRAPHIC FRATERNITY*. For the future the "Club terms" are done away with. But few subscriptions are now made in this way, and the club system is more trouble and annoyance to us, our agents and subscribers, than it amounts to. Single subscriptions will remain as before, at \$2 per year, payable in advance.

We shall not at present offer any long premium list, but will make the following premium propositions: For four subscriptions to *THE TELEGRAPHIC FRATERNITY*, at the regular subscription price for one year, we will send a copy of the paper free to the person sending us the subscriptions.

For ten new subscribers we will give, as a premium, PICKETT'S Memorial Bust of Prof. S. F. B. MORSE. This bust is what is termed cabinet size, and is finished after the style of the celebrated ROGER'S groups, and is a superior work of art.

To those who may interest themselves in procuring subscriptions we will allow, in lieu of the above, for new subscribers, 20 per cent. upon the amount collected, which may be retained in cash, or we will send any books or instruments that may be desired for the amount of commission as a premium.

We trust that these propositions will meet with approval, and that the friends of the telegraphers' organ will at once use their best exertions to secure a handsome addition to our subscription list.

How The Telegrapher may be made More Influential and Useful.

THE communication over the signature of KANSAS, which we publish in the current number of *THE TELEGRAPHIC FRATERNITY*, is worthy of careful consideration by every member of the fraternity to whose notice it may come. The main idea which our correspondent seeks to convey is that the power and influence of the organ of the telegraphic fraternity will be in proportion to the support which it receives from the fraternity. It ill becomes any telegrapher who neglects to contribute, at least to the extent of his or her individual subscription, to the support of *THE TELEGRAPHIC FRATERNITY*, to raise the objection that it has little influence. And just here we desire to say that those who make this objection are entirely mistaken in their conclusion. We have constant reason to know that even as it is the paper has great influence, and that to its independence and sincere advocacy and support of the cause of the telegraphic laborers, they are to-day indebted that their position and condition are as tolerable as they are. Were *THE TELEGRAPHIC FRATERNITY* silenced, it is morally certain that no similar publication, or one in the interests of the practical telegraphers, could be established or maintained for even six months. This paper once disposed of the fraternity would henceforth have no organ or advocate, and would be at the mercy of the capitalists and managers whose only interest in them is to obtain the maximum of work for the minimum of compensation. With or without an organization to back it *THE TELEGRAPHIC FRATERNITY* is influential. If the fraternity, or a majority of them, are oblivious to this fact, their employers are not, as we could easily prove if so disposed. The attempts made in the past to destroy it are sufficient evidence, but we have had even more convincing proofs that the power and influence of the paper are felt in quarters which many telegraphers believe entirely indifferent to its existence.

But, notwithstanding this fact, the idea of KANSAS that the power and influence of the paper will be in proportion to the extent of the practical appreciation and support of the fraternity, is correct.

At least three fourths of those who make telegraphy their business and means of obtaining a livelihood should have their names upon its subscription list, and keep them there by promptly renewing their subscriptions as they expire. The great difficulty we have to contend with in keeping up our subscription list is in the carelessness of subscribers in the matter

of renewing their subscriptions. It is curious to trace certain names through the subscription book of the paper during the past eight years. The name of JOHN SMITH, as an illustration, may be found entered for a year's subscription in 1838. Perhaps more than one letter has been received from JOHN by the editor during the year expressing his earnest and hearty appreciation of the paper and its general management. The year expires and JOHN's name disappears from the list, no renewal of the subscription being received, and the paper being conducted on the cash or advance payment plan, the only sensible and living principle for any class or subscription paper. Six months or a year afterwards some *TELEGRAPHIC FRATERNITY* missionary awakens JOHN to its merits and the claims of the paper to his support. Down goes JOHN's name on the list again for another year, again to be erased at the expiration of the subscription, perhaps again to be renewed upon the application of another canvasser after the lapse of months. And we can assure our readers that the family of SMITHS is a very large one. Then, again, there are many telegraphers who never renew, but would do so in most instances if closely followed up with persistent personal solicitation.

These facts are sometimes discouraging, but we have the satisfaction of knowing that *THE TELEGRAPHIC FRATERNITY* is the only self-supporting telegraphic publication, either newspaper or magazine, which has ever been published in this, or as far as we have any knowledge, in any other country. When it ceases to be self-supporting its present editor and publisher proposes to "let it slide," and we don't expect it to "slide" very soon either.

We commenced this article on the hint of the communication of KANSAS to consider how it could be made better and more influential. Our correspondent has himself solved the problem—it is by a more general support of the paper by its constituency, in whose interests it is published, and for whose rights and advancement it maintains an unceasing contest from week to week. We do not desire or intend to beg for the support which should be accorded to the paper on its merits, and for the cause it represents, without even solicitation. Those who complain of the quality of the publication should remember that, beyond a certain point, its improvement depends upon the liberality of its patronage. Its field is limited in one sense, as it is strictly confined to telegraphy, and consequently cannot expect support except from those immediately interested in telegraphy. If only one in eight or ten of these subscribes for the paper, of course its circulation and income must be restricted. A restriction of income compels economy in making up the paper, for we certainly do not intend to publish it at a loss. With an increase of support we can and will expend more money upon the paper, and give to its subscribers more and better material for their money. It will thus be seen that the way to obviate the objections which our correspondent encounters, in his attempts to secure subscriptions for the paper, can be removed most effectually by a more general support on the part of the fraternity, and every additional subscriber can, at the same time, have the satisfaction of knowing that by so much as he or she represents the totality of the telegraphic fraternity, the power and influence of its organ is increased.

The Page Patent, and Injunctions Under It.

A FEW days ago a report was circulated upon the Stock Exchange in this city that the Western Union Telegraph Company had applied for an injunction against competing companies for violation of the PAGE patent, and that shortly that company would monopolize the entire telegraph business of the country. On this, and reports in regard to an increase of charges, the stock of the Western Union Company advanced temporarily one per cent.

The report having served the purposes of the stock jobbers and speculators, was of course allowed to die out, and the "street" was ready for a new sensation.

Our readers have been kept fully advised of the condition of the PAGE patent controversy, and are of course aware of how little that bugbear should be allowed to influence the value of telegraph property. No injunctions can be obtained under that patent until its validity has been fully established in the Courts. The present owner of the patent is the Western Union Company, and its managers are fully aware of how

little chance it has of ever being finally sustained. The fact that it was once rejected as of no value by these very parties, after an exhaustive investigation into its validity by its experts and legal advisers, is sufficient evidence that they are aware of its real character and standing. As a part of the scheme for advancing the value of the stock for speculative purposes, it was believed that the ownership of this patent would prove of sufficient advantage to warrant the necessary investment, and it was purchased, and suits commenced under it. These suits are not to be let go by default, or with a weak and insufficient defence, as it was hoped they might be. They are to be contested to the court of last resort, which is the Supreme Court of the United States, and it is not probable that a final decision can be reached in less than from three to five years, and in the meantime no injunctions can be obtained. As we have before stated, able counsel has been retained, and an organization of all the opposing elements, which comprises all parties interested in telegraphy except the Western Union Company and its allies, is being effected, to resist to the utmost the wrong and outrage which the enforcement of that patent would be. Every telegraph line and company outside of the Western Union combination, every railroad and private telegraph line, every manufacturer and dealer in telegraph and electrical apparatus, is interested in this matter, and should at once come into the organization for opposing the enforcement of the patent.

The Telegraphic Service of the Signal Bureau.

IT has been known for some months past that there had been some difficulty in obtaining weather reports thoroughly and promptly by the Signal Bureau, and that there had occurred a difference of opinion between the managers of the Western Union Company and the Government officials, as to the liability of the former to perform all the services required at what was claimed to be the inadequate compensation fixed by the Postmaster-General, under an Act of Congress giving him authority to determine the rate of compensation which should be paid for telegraphic service rendered to the Government by the telegraphs of the country. The following is a clear and intelligible statement of the matter, showing the points of difference between the Western Union Company and the Government, and the manner in which the business is now done, and the part assigned to the different companies. The arrangement appears to be working more satisfactorily now than it did at first, the operators having become familiarized with the routine, and the business on the several lines having been more thoroughly systematized.

On the 30th of June last the Western Union Company discontinued the transmission of signal service weather reports, according to the system of the Signal Office, on the ground that the compensation was insufficient to warrant its continuance. The rates fixed by the Postmaster-General, for the year ended June 30th, 1872, were two cents per word; and for the year ending June 30th, 1873, three cents per word for transmission of weather reports over the circuits adopted by the Chief Signal Officer, which were of an average length of about six hundred miles. The officers of the company did not question the validity of the law requiring priority in transmission of all Government telegrams, nor the authority of the Postmaster-General to fix the rates, and declared their readiness to transmit any Government messages during the regular business hours of their offices, but they denied the right of the Government to require offices to be kept open at unusual hours, and the reports to be sent over special circuits and dropped at intermediate offices. Since July 1st the service has been performed partly by the opposition and partly by the Western Union lines. At present regular circuit work is done by the Franklin, Atlantic and Pacific, Central Pacific and Great Western, Pacific and Atlantic, and Northwestern Companies. The Southern and Atlantic and International Ocean Companies are transmitting the reports from stations in their territory as single messages, nothing more having, so far, been required of them by the Signal Office. Reports from stations not reached by the lines of these companies are sent by the Western Union to the nearest offices on the opposition circuits, where they are consolidated into the regular system. The number of stations has been increased from 25 to 74, and the work is a heavy item in the telegraphic service of the country.

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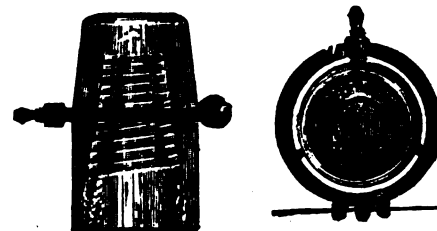
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1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .179 of an inch.)

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We now offer for sale this Uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market, to which this system of tests is uniformly applied.

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The capacity or endurance of No. 9 is 21 to 23 twists upon itself in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

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with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

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Although the wire has been proved immensely superior to that commonly sold, its price will closely approximate to that of the inferior article.

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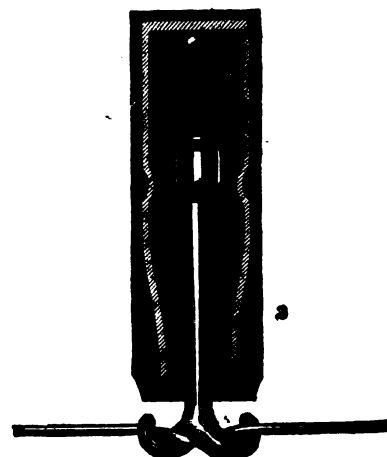
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The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 65.

New York, Saturday, November 16, 1872.

Whole No. 331

[FROM THE AMERICAN JOURNAL OF SCIENCE AND ARTS.]

On the Allegheny System of Electric Time Signals.

BY PROF. S. P. LANGLEY.

THE necessity of a uniform standard of time for the railways of the United States is one which is growing into importance with the increasing extent of our railway system, and we are, ere long, in this country, to be called on to settle for ourselves a practical problem which has already been solved in England, and which is beginning to make its demand for solution upon the managers of our railroads.

Since past experience shows that their probable adoption of a new and common standard will introduce it to public notice and discussion, and then to adoption by cities and individuals, it is desirable that this should not be done without the direction which intelligent and scientific cooperation will give to a movement originated by the demands of intercontinental traffic. As few are aware how generally this cooperation has already been invoked, nor to what extent the public is indebted to observatories for increased security of transit, it has seemed that an account of what has been done in this direction in any one of them would be of interest.

The earliest introduction of the system of electric automatic transmission of time signals, on an extended scale, appears to be due to the observatory of Greenwich.

The Astronomer Royal, with Mr. C. V. Walker, commenced their use in 1852, carrying for that purpose special wires on the poles of the South Eastern Railway from Greenwich to London bridge. The subsequent extension of the use of Greenwich time under this system has been almost universal throughout the United Kingdom—the observatories of Glasgow and Liverpool, under the direction respectively of Professor Grant and Mr. Hartnup, as well as that of Edinburgh, having taken part in bringing it to its present condition of utility. For an instructive and very full description of the methods employed at Greenwich, reference may be made to an article in the *Horological Journal* for April, 1865, by W. Ellis, Esq., F. R. A. S., to whom, as to all the gentlemen named, the writer has been indebted for much kindly given information on the results of their long experience.

Although the introduction of the plan in this country has been comparatively recent, the number of American observatories which thus distribute time is so considerable that the most partial account of their methods, and the extent of their work, would exceed the limits of such an article as the present. In this, the only arrangements described are those in use at the Allegheny Observatory, with which the writer has become familiar from the responsibility of their initiation and superintendence. It is proper to add that, were he writing a history of the progress of electric time signals in the United States, other observatories which have before employed not dissimilar means, would receive earlier mention, and that his own part in introducing these signals at the Allegheny Observatory has been less the contribution of any novel device than an adaptation of what seemed the best features of plans in use abroad, their arrangement in a form adapted to the needs of American railways, and the supervision of their application to the wants of cities and individuals. In doing this a great number of ingenious devices have been examined, and if the system to be described appears to be one of the simplest, it has yet been reached only after much care in setting aside all which would not bear the test of practical trial.

The subject was first specially considered at the Allegheny Observatory some three years since, and a plan was arranged for the managers of the Pennsylvania Central Railroad in 1869. Previously to this, however, at the request of some jewelers of Pittsburg, the time had been transmitted to their stores, at a distance of some miles from the observatory. The system now described has been in use for nearly three years, in furnishing the Pennsylvania Central Railroad with its official standard of time, and by it the time is now sent daily to Philadelphia on the east, as far as Lake Erie on the north, and to Chicago on the west—regulating the clocks on a number of minor roads over whose wires it goes, as well as on those of the principal southern lines connecting the Atlantic with the Missis-

siippi. Thus passing, as it does, over several thousand miles daily, it is believed to be at present one of the most extended systems of time distribution in the world.

The observatory is on the summit of the ascent, on the northern side of the valley of the Ohio, about two miles in a direct line from the offices of the Western Union Telegraph Company in Pittsburg, and rather more from those of the Pennsylvania Central, and Pittsburg, Fort Wayne and Chicago roads. It is connected with these points by three independent lines of telegraph. One of these runs to the Western Union offices, and thence to the stores of a considerable number of jewelers in Pittsburg. This is called the "Jewelers' line." The second, connecting the observatory through the offices mentioned with eastern Pennsylvania and New Jersey railways, and also with Chicago, is known as the "Railroad line." The third, consisting of a double wire or "loop," communicating with the city, is employed occasionally for the observatory's own messages, and when (as for instance, in longitude determinations) it is wished to send sidereal time, without interrupting the regular transmission of signals from the mean time clock. In the transit room, in the western wing of the observatory, are kept the sidereal clock, by Frodsham, of London, and the principal mean time clock, by Howard, of Boston.

On the escape wheel arbor of this, the standard mean time clock, and turning with it once a minute, is a wheel cut with sixty sharp radial teeth, of which those corresponding to the 50th, 51st, 52d, 53d, 54th and 59th seconds of the minute have been removed by a file. Near the clock is a "repeater," the circuit through whose coils passes through a local battery, through a second clock in the computing room, and then through the standard clock. Each wire terminates in a delicate spring, close by the wheel just mentioned. While the extremities of these springs, which are shod with gold and platinum, rest in contact, the circuit is unbroken; it is opened by the minutest lifting of one from the other, and this is effected automatically by means of a ruby attached to one of them, and placed within reach of the wheel above mentioned. As each of these teeth passes, the ruby, and with it the spring, is lifted through a minute distance. (Not in practice more than one one hundredth of an inch, and usually much less.) Once a second, therefore, the circuit is opened during a period of probably less than a twentieth of a second, and as the wheel advances a tooth with each vibration of the pendulum, the armature of the repeater is raised each second of the minute until the 49th is completed.

Since the teeth corresponding to the next five seconds have been filed away, during those seconds the jewel is not touched nor the circuit opened. The consequent silence of the "repeater's" beats draws attention to the fact that the end of the minute is approaching, its completion being indicated by the short pause caused by the absence of a tooth at the 59th second.

This action is repeated in every minute of the twenty-four hours without variation. The particular second is thus identified, but one minute is (so far as the action of the standard clock is concerned) not distinguished from another. To do this is the work of the subsidiary clock in the computing room, through which the local wires are led, as has been mentioned. This subsidiary clock (made by Howard, of Boston) may be called for distinction the "journeyman," and its principal office is not to give the time but to interrupt the circuit, which it does on or near the completion of the 58th minute, closing it again about half a minute before the completion of the hour. When the circuit is opened by the journeyman the repeater is silent for a minute and a half; when it is closed, the standard is again heard ticking on the repeater, and the ensuing short pause evidently precedes the first second of the first minute of the hour. The time is thus wholly derived from the standard clock, and is independent of any other, the journeyman having no power to control or in any way react upon the primary, and being able only to interrupt the messages it sends, not to falsify them.

The mechanism for effecting the transmission of the time is essentially that already described, but more is needed to insure against possible interruption. This may occur from several causes, prominently from

oxidation of the platinum or gold contact surfaces, when the current must be interrupted while they are cleaned, if there be no other clock. To meet this contingency a chronometer of peculiar construction was made for the observatory by Frodsham. It resembles the ordinary marine chronometer in external appearance, but contains in miniature the apparatus for breaking circuit already described, the wheels being cut so as to give the same signal of the approaching end of the minute as the standard clock. The peculiarity consists less in this, however, than in a device by means of which it can be caused to gain or lose any fractional part of a second, or any number of seconds, without being stopped, and without any disturbance of its normal rate, except while the change is being effected. This chronometer is to replace the prime clock in the circuit, during any temporary stoppage of the latter for repair or adjustment.

The mechanism which has just been described acts in connection with the local circuits of the observatory—one battery being employed for the sidereal clock and chronograph and another for the mean time standard. Any interruption of the main external circuits is shown at once, by the action of a galvanometer in each, which makes an audible and visible signal when the circuit is opened. The accessory apparatus, such as batteries, relays, switch-boards and so forth, which are used in every telegraph office, it will be superfluous to describe here in detail, but before following the operation of the electric current, outside the observatory, it will be well to speak of the method which has been adopted as likely to ensure most accuracy in the time keepers which control it.

The transit instrument in the western wing is of four inches aperture, and with it and the chronograph observations for time are made on every fair night of the year except on Sunday, when, if complete determinations have been made on the preceding night, none are taken. The instrument is of sufficient power to follow the principal Nautical Almanac stars in the day, and these are used (or more rarely the sun) when the weather permits if the usual night observations have been missed. From three to six stars are customarily taken, the azimuthal error of the instrument being found from the observations of each night, after the other corrections are applied, and the results determined from the chronograph and the sidereal clock. The mean error in the resulting determination of the sidereal clock correction is from three to four hundredths of a second, but it cannot be assumed that that of the mean time standard is known within these limits, except at the time that the observations are freshly made.

(Concluded next week.)

Miscellaneous.

THE NATURE AND DURATION OF THE DISCHARGE OF A LEYDEN JAR.—When the primary coil of an inductorium is connected with a voltaic battery, the act of interrupting the connection, as is well known, produces a current of electricity in the secondary coil, which can be accumulated in a Leyden jar and then discharged by a spark. Now it is possible to adjust either the electrical surface of the jar, or its striking distance, so that, with a given coil, only a single spark will be produced each time that the battery circuit is broken; but in the great majority of cases it will happen that enough electricity will be generated to charge and discharge the jar a number of times. The circumstance that electricity, continuously furnished by the coil during the fraction of a second, is favorable to the production of these multiple discharges, as has been demonstrated by Professor Rood in a number of experiments, from which it also appears probable that an increase in the striking distance is accompanied by a corresponding increase in the interval between the sparks composing the multiple discharges, though upon the whole it shortens the total duration of the act by diminishing the actual number of discharges.—*American Journal of Science and Arts.*

The aeronauts, Mr. Glaisher and his companion, Mr. Coxwell, reached an altitude of 37,000 feet, or seven miles from the earth, where they found a temperature of 80 deg. Fahr. below freezing.

The Telegraphers' Mutual Life Insurance Association.

At the annual meeting of the Telegraphers' Mutual Life Insurance Association, held at 145 Broadway, Friday evening, Nov. 1st, 1872, the following reports were submitted and accepted, and were directed by the meeting to be furnished to THE TELEGRAPHIC for publication:

SECRETARY'S REPORT.

NEW YORK, Nov. 1, 1872.

The Secretary respectfully presents the following report for the year ending Oct. 31, 1872:

Total number of certificates issued by the Association to November 1, 1871 1255

Total number of members in good standing. 758

Showing a loss from all causes since the organization of the Association of..... 497

1255

Number of new members added during the year..... 421

Number of members in good standing—previous report Nov. 1, 1871..... 758

1179

Losses during past year—Resignations..... 3

Non-payment dues 187

Deaths..... 11

201

Leaving in good standing, Oct. 31, 1872..... 978

DEATH LIST.

NAME	CAUSE OF DEATH	DATE	PLACE
Christopher Reynolds.....	Consumption.....	Nov. 6, 1871.....	Gothen, N. Y.
Chas. A. Kellogg.....	".....	Feb. 2, 1872.....	Rochester, N. Y.
Geo. H. Patriquin.....	".....	" 29, ".....	Tusamagouche, N. S.
Taylor L. Brown.....	".....	Mar. 8, ".....	Athens, Tenn.
John Grant (of Canada).....	".....	" 17, ".....	Atlanta, Ga.
Miss Emma Sammis.....	Tumor.....	" 17, ".....	Brooklyn, N. Y.
Richard Waterman.....	Consumption.....	Apr. 8, ".....	Lafayette, Ind.
Miss L. Q. Judge.....	".....	June 28, ".....	Brooklyn, N. Y.
Frank A. Randall.....	Inflammation of the Bowels.....	Sept. 13, ".....	Ann Arbor, Mich.
Andrew Ainsworth.....	Consumption.....	" 16, ".....	Greencastle, Ind.
Chas. H. Baker.....	Unknown.....	Oct. 26, ".....	Baltimore, Md.

There were eighteen delinquent members reinstated during the year, all of whom furnished me Health Certificates and paid up "back dues," as required by the association.

The loss of small remittances through the mails has been a source of great annoyance to members living at stations where they were unable to procure postal money orders. During the early months of the present year the complaints of this nature were so numerous that it was deemed advisable to investigate, and as thoroughly as possible, the cause of such losses. The facts were placed in the hands of a special agent of the Post-office Department in this city, who watched the incoming remittances for several weeks without discovering the loss of any letters after they reached the General Post-office. It is a noticeable fact, however, that the complaints have been very few since the investigation was made.

It has been discouraging to many who were compelled to remit twice for the same assessment, and is doubtless the cause of many allowing themselves to become delinquent. In cities and large towns, where the members have selected one of their number to act as a local agent, to attend to the collection and forwarding of remittances, there is scarcely ever a delinquent. It is suggested that if the Executive Committee be authorized to form districts, and appoint a local agent for each district—such agent to receive applications, collect dues, and attend to all other matters pertaining to the association—there would be less liability to loss of remittances, and, consequently, a material reduction of the "Delinquent List."

It is to be regretted that many members change their residences without notifying the Secretary, causing their remittances to go astray. This would be obviated by the formation of local districts, as the agent could promptly notify the Secretary of any changes.

W. K. APPLEBAUGH, Secretary.

TREASURER'S REPORT.

NEW YORK, Nov. 1, 1872.

The following is respectfully submitted as the report of the Treasurer for the year ending Nov. 1st, 1872:

The present incumbent has held the office since the first of April last. At that time the retiring Treasurer presented a statement showing a balance in the Treasury of..... \$2,750 42

The receipts since that date has been as follows:

From 164 new certificate members, 1513 to 1676, inclusive..... 246 00

Received from the Secretary, on account of assessments..... 6,192 09

Interest on deposits..... 63 34

Total..... \$9,251 85

The disbursements during the same period have been:

Paid to heirs of G. H. Patriquin..... \$792 00

" " T. L. Brown..... 832 00

" " John Grant..... 872 00

" " E. Sammis..... 886 00

" " E. Waterman..... 869 00

" " L. Q. Judge..... 896 00

" " F. A. Randall..... 969 60

Postage, and printing assessment notices.. 76 44

Stationery..... 7 25

Refunded C. A. Gaston, by order Executive Committee..... 3 50

Secretary and Treasurer's services..... 79 34

Paid G. G. Small, for services in transferring names and accounts in Secretary's books..... 13 00

Total..... \$6,346 13

Leaving a balance in the Treasury..... \$2,905 72

Of this amount, there is payable to the heirs of Andrew Ainsworth..... 911 00

Returns from assessment No. 33..... 896 00

Advance payments on assessments..... 195 00

Credit to the reserve fund of the Association,..... 903 72

\$2,905 72

The reserve fund above mentioned has accrued partly from initiatory fees, but chiefly from the payment by members of assessments long overdue. As this fund is steadily increasing in amount, the disposition to be made of it becomes an important question. It has been suggested that it might be used to pay some future assessment, thereby relieving the members from the payment of the usual fee. If this course is adopted it would be well to empower the Executive Committee to decide when the fund shall be so applied.

Nearly a year ago President Orton, on behalf of the Western Union Telegraph Company, agreed to pay to the heirs of such deceased members of this association as were, at the time of their death, in the employ of the company, the sum of one hundred dollars. This sum has accordingly been paid to the heirs of C. A. Kellogg, Miss E. Sammis and F. A. Randall. This generous action on the part of the company has greatly aided in extending our membership among Western Union employes, and the propriety of some acknowledgment from this meeting to the company needs to be suggested.

Respectfully, A. S. BROWN, Treasurer.

New York, Nov. 1, 1872.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

A Telegrapher on his Travels.—Notes of Western Telegraphs and Telegraphers.

PHILADELPHIA, Nov. 9.

TO THE EDITOR OF THE TELEGRAPHIC.

HAVING recently enjoyed one of those oases in a telegrapher's life, a vacation, which was spent in a western trip, it occurs to me that a brief account of my travels and observations may interest some of your readers. The trip was a very pleasant one, and I had an opportunity to view reconstructed or reconstructing Chicago, which is rising from its ruins with astonishing rapidity.

I left Philadelphia on Saturday, Sept. 7th, on the 12.40 P. M. train of the Pennsylvania road, reaching Chicago, via Pittsburg and Fort Wayne, at 7 P. M. Sunday evening. As we were approaching Chicago the rain commenced to fall in torrents. On arrival, upon alighting from the cars, the first person who greeted me, which he did with a heartiness assuring a most cordial welcome, was our old friend, Mr. Sorelle Pearson, formerly receiving clerk of the Pacific and Atlantic Company in this city, but who is now the cashier of that Company at Chicago. He had been notified of my probable arrival, and was prepared with a good top buggy to escort us safely through the rain to our temporary stopping place. It is always pleasant to meet a good fellow like Mr. Pearson, but more especially so when arriving in a strange city, weary and travel-stained, with a pouring rain storm in active progress, calculated to test the insulation of the wires as well as the patience of travellers most severely.

The evening was spent in social enjoyment with

Pearson and other friends, which revived memories of *auld lang syne*, and at last we retired to our rooms, pleased with this meeting with old acquaintances once more, from whom we had been so long separated.

On Monday morning I visited the Pacific and Atlantic Company's temporary main office, at No. 454 Wabash avenue, which has been occupied since shortly after the great fire of a year ago. This office has served very well as a temporary abiding place, but I found them preparing to move to their new office, at No. 124 LaSalle street. This is a very fine location, it being in the new business part of Chicago. The new Western Union, Atlantic and Pacific, and Great Western Companies' offices are on the opposite side of the same street, which is to be hereafter the telegraphic centre of the Western metropolis.

The new office is very handsomely fitted up. The operating room is very large and pleasant for those employed in it, and has been arranged in a convenient manner, with all the appliances requisite for the transaction of business efficiently and satisfactorily. The office of the District Superintendent, Mr. S. S. Garwood, is on the left of the operating room, and is quite a handsome apartment. The arrangements for receiving and delivering messages are very good, and this company is now fully prepared to transact promptly and satisfactorily the business intrusted to it.

The Pacific and Atlantic Company, I was informed, do an excellent telegraph business here, which is largely owing to the able management of Superintendent Garwood, who thoroughly understands how to secure and retain the share of public patronage which should reward the efforts of the company to furnish telegraphic accommodation to the public.

The telegraph business of Chicago is enormous, and increases very rapidly. Mails and expresses are too slow for the average Chicagoan, who cannot be content unless he can compress twenty years of ordinary business life and activity in five, and, consequently, telegraphs flourish in this metropolis of the west. The citizens of Chicago pride themselves on the rapidity with which a great city was built up out of a swamp, destroyed, and now, to a great extent, rebuilt. They are somewhat disposed to regard eastern people as rather *slow*, and think that eastern capital and energy can be placed to better advantage in Chicago than in any other spot in the civilized world.

All of the telegraph companies here have been quick to appreciate the situation, and accordingly the provisions for telegraphic accommodation are commensurate with the demand for them. The streets are largely occupied with telegraph poles, and wires are being extended in all directions on them, and on the house tops as well. Space and time will not suffice to give a detailed description of the several offices, but they are very complete in their arrangements, and the facilities afforded are very fully availed of by the go-ahead and enterprising public. I found employed under Mr. Garwood's superintendence another old Philadelphia friend and acquaintance, William King. He has a cosy office on Market street, above Madison. He informed me that he was to go to the new office in the Chamber of Commerce building, which was to be completed in a few days subsequent to my visit. I found, also, Mr. Con. G. Pearson filling the position of delivery clerk in the P. and A. main office, and was much pleased to meet him. All of these gentlemen are looking well, and although necessarily very busy, seem to enjoy their residence in Chicago.

Nothing was omitted which could add to the pleasure of my too brief visit, and I was taken through the burnt district, on the south side, to Lincoln Park, on the north side. This whole territory is being rapidly rebuilt, and wonderful progress has already been made in the reconstruction of the waste places. Hyde Park and other places in the environs were also visited, and on the whole I had a most delightful time, and am under great obligation to my telegraphic friends in Chicago for their attentions and continual kindness during my stay in the city.

On Wednesday morning I left Chicago by the Chicago and North Western Railway for Omaha. Judging from the excellent condition of the telegraph lines along the road, I should say that the efficient superintendent of telegraphs, Mr. George H. Bliss, is not only a good manager of wires but an able electrician as well. There is nothing old foggy about Mr. Bliss, and, as far as he is permitted to do so, he introduces all real improvements upon the lines under his management. He has in constant use a Siemens galvanometer, which he knows how to use to the best advantage.

About 120 miles out from Chicago, on the C. & N. W. R. R., I was agreeably surprised at meeting Mr. David Brooks, of this city, who for the time had abandoned insulators for the enjoyment of a brief hunting excursion in the west. It was indeed a pleasure to meet a fellow townsman so far from home. Mr. Brooks had with him his superior "setter" dog Bismarck, who in his way is nearly as celebrated as his master. He informed me that he was on his way to State Centre, Iowa, on a hunting expedition. Subsequently I noticed in *Enterprise*, a newspaper published at State Centre, a statement of the results of the prowess of Mr. Brooks and Bismarck in the field. Two hundred prairie chickens was the net product, in one week, of their joint sport. Mr. Brooks is as good a shot as he is manufacturer of improved insulators, which is saying a good deal. Two other gentlemen accompanied him, with three dogs, but although equally good shots, together they failed to secure as many birds, owing to the superior qualities of Bismarck.

I spent two weeks very pleasantly roaming through

THE TELEGRAPHIC

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, NOVEMBER 16, 1872.

Premiums and Commissions.

WE have decided to make a slight change in the terms of subscription for THE TELEGRAPHIC. For the future the "Club terms" are done away with. But few subscriptions are now made in this way, and the club system is more trouble and annoyance to us, our agents and subscribers, than it amounts to. Single subscriptions will remain as before, at \$2 per year, payable in advance.

We shall not at present offer any long premium list, but will make the following premium propositions: For four subscriptions to THE TELEGRAPHIC, at the regular subscription price for one year, we will send a copy of the paper free to the person sending us the subscriptions.

For ten new subscribers we will give, as a premium, PICKETT'S *Memorial Bust* of Prof. S. F. B. MORSE. This bust is what is termed cabinet size, and is finished after the style of the celebrated ROGER'S groups, and is a superior work of art.

To those who may interest themselves in procuring subscriptions we will allow, in lieu of the above, for new subscribers, 20 per cent. upon the amount collected, which may be retained in cash, or we will send any books or instruments that may be desired for the amount of commission as a premium.

We trust that these propositions will meet with approval, and that the friends of the telegraphers' organ will at once use their best exertions to secure a handsome addition to our subscription list.

The Telegraph Making the Whole World Kin.

OCCURRENCES like the great Chicago fire of last fall, and the Boston conflagration of last Saturday night, forcibly demonstrate the value and beneficence of the telegraph. While the devastation is in progress the tidings are spread far and wide, the sympathy of the world is aroused, and assistance and relief are organized and on the way to the afflicted locality. Supplies of provisions and money reached Chicago last year from places hundreds of miles distant almost before the fierce flames had subsided to smouldering ruins. At the Boston fire help was summoned from the neighboring towns and cities for fifty miles around, and within an hour from the time called for, men and fire engines reached that city from Worcester, 44½ miles distant—steam enabling their transportation from the one city to the other in 45 minutes. Instantaneously the cry for help was transmitted by telegraph, and with equal relative speed the help was transported by railroad to where the roaring flames were devastating a section and threatening the destruction of the whole city. The inability of the local fire department and apparatus to combat successfully or stay the progress of the flames had been fully demonstrated, and but that the combined means and energies of a dozen smaller places could be concentrated by the aid of electricity and steam, it is probable that a very large part of the city must have fallen a helpless prey to the element, which did, in fact, destroy its apparently least combustible portion.

And not only in the facility of summoning assistance for the immediate emergency is the benefit and beneficence of the telegraph shown. Throughout the whole extent of the country, from Maine to Georgia, and from the Atlantic to the Pacific Ocean, the hearts of the people are thrilled with the tidings of the terrible affliction which has befallen the community in actual distance so far away, in fellowship and communication so near, and with no stinted or grudging measure they respond in practical, spontaneous manifestation of their sympathy. In the more recent instance, owing to the small number of dwelling houses consumed, there was nothing like the immediate personal suffering caused by the Chicago fire, and, therefore, not the necessity for instant and extensive measures of relief being taken. Had there been, however, the telegraphic tidings of the calamity would have received a similar prompt and liberal response, and lightning trains have borne ample contributions of food, clothing and money, to meet the urgent necessities of those, for the time, prostrated and

helpless under their great calamity. And not alone throughout our own country but throughout the world, by means of the electric cord, which binds peoples, nations and lands in one universal community, the tidings were disseminated, and in London, Paris, Madrid, St. Petersburg, Calcutta, China, Japan, Australia, sympathy was excited on that Sabbath with a city and a people personally unknown, but through the telegraph brought into intimate, practical community and brotherhood. The telegraph is, indeed, the true evangel, and is, year by year, obliterating the alienation which distance and time have heretofore caused, and bringing into a general brotherhood and kinship all nations and peoples upon the earth.

Great calamities and emergencies, such as these, demonstrate more forcibly and convincingly the real value and incalculable importance of the telegraph than years of ordinary every day experience of its use. It should make those who are its ministers and operators proud of their part and lot in this mighty agency which moves and regulates the world. Theirs is truly an honorable profession, and if they are true to it and to themselves, it will yet be universally so regarded, and those engaged in its administration be recognized as benefactors of mankind.

The Great Boston Fire and the Telegraphs.

THE great fire at Boston, Mass., which commenced on Saturday evening last, and before it could be subdued burnt over more than two hundred acres of the principal business portion of the city, caused a good deal of trouble and disarrangement to the telegraphs in that city, although the main offices fortunately escaped. It seemed at one time as though the Western Union main office at No. 83 State street must go, but the fire was finally checked before it reached the building. When the real character of the conflagration became evident, every thing in the office was packed up and prepared for instant removal. Many of the wires of the Western Union and Franklin Companies ran through the burnt district, and were destroyed. This, combined with the threatened destruction of the buildings in which the main offices were located, made a temporary removal necessary, and the requisite apparatus of the Western Union Company was removed to the depôts of the Albany and of the Providence railroads, where quarters were temporarily obtained. Temporary offices of the Franklin Company were also established above the line of the fire, and every facility possible was furnished by both companies to accommodate the great pressure for telegraphic accommodation. The executive offices of the Franklin Company, which were located in Kilby street, were destroyed in the fire. Beyond this, and the destruction of lines and a few branch offices, the telegraph in this case escaped damage. Large reinforcements of line repairers and operators were at once forwarded to Boston by both companies, to assist in restoring the wires destroyed, and to relieve the overtasked operators. Twenty-seven men, in charge of Gen. Supt. Eckert and Manager A. S. Brown, of the Western Union Co., left this city for Boston by railroad Sunday P. M., and rendered effective service in restoring and reestablishing telegraphic communication as before the fire.

The main offices of both companies were reestablished on Tuesday in their old quarters, and business proceeded as usual. In the Chicago fire, lines, offices and apparatus were all destroyed, and the telegraphs had practically to be entirely rebuilt.

The fire has of course created an enormous pressure of telegraph business to and from Boston, but little complaint is made of delay or inadequate accommodation.

In regard to the Fire Alarm Telegraph the Boston *Herald* of Tuesday says:

"We are informed by Superintendent Kennard, of the Fire Alarm Telegraph, that only four out of the ten circuits were injured by the fire, and that yesterday afternoon all the city, except Dorchester and a portion of the Roxbury districts, were reached by the wires—and in the outlying districts arrangements were made to ring the church bells, as was done before the introduction of the telegraph wires. By to-night Mr. Kennard states that the entire city will be reached from the central office in the City Hall, with which every box will communicate except those destroyed by the fire—and of course these would be of no use if they were in place. Much credit is due Mr. Kennard for his promptitude in having the repairs in the wires made, as his is one of the most important departments connected with our Government."

Telegraph Poles in the Streets of Cities.

WE printed last week, from the Chicago *Times*, a communication from Dr. E. A. HILL, of Chicago, on the erection of telegraph poles along the streets, and running of telegraph wires over the buildings in that city, which ably discusses a subject that must soon receive attention. The enormous increase of telegraph business, and the consequent additions to the number of wires employed, the adaptation of the telegraph to various purposes—such as reporting quotations, the American District Telegraph System, by which hundreds of dwellings and business edifices are brought into telegraphic circuit, the Fire Alarm and Police Telegraphs, the constantly increasing use of private telegraph lines—are rapidly covering the streets and buildings of our large cities with poles and a net work of wires, which, to put it mildly, do not add to their sightliness or the symmetry of their appearance. In this city, for instance, many of the business and other streets are encumbered with numerous and unsightly poles, some of them on both sides of the way, and these are being daily added to, while in the lower part of the city the buildings are crossed and recrossed with a confusing mass of wires.

Eventually the limit to which this system of telegraph construction can be carried must be reached, aside from any consideration of the effect it may have upon the appearance of the city. The wires must go under ground necessarily, and it would be the part of wisdom for those interested to take the matter into careful and earnest consideration voluntarily, before it is forced upon them by municipal action.

We commend to them the remarks and suggestions contained in Dr. HILL's communication, which will apply with equal if not even greater force to New York and other large cities.

Telegraph Instrument Makers Wanted in San Francisco, Cal.

THE attention of telegraph instrument makers is called to the advertisement of the Electrical Construction and Maintenance Company, of San Francisco, California. This company has a monopoly of this business on the Pacific Coast, and is a strong and well established company, and mechanics who desire to remove to California will no doubt find this an excellent opportunity for securing good positions, adequate remuneration and prompt payment.

Another Fire Alarm Telegraph Contract.

Messrs. GAMEWELL & Co. have just closed a contract for the construction of their automatic fire alarm telegraph in the city of Plainfield, New Jersey. This rapidly growing city has heretofore been without a fire alarm telegraph, and its authorities have shown good sense, and an appreciation of the importance of the American Fire Alarm Telegraph System, in guarding it from destruction by fire.

The Telegraphic Connection of the Antipodes.—Scant Recognition of an Important Event.

THE *Railway News*, of London, says: "The 21st of October is a day which will hereafter stand in the calendar as worthy of the most auspicious notification, as the anniversary of the establishment of telegraphic communication between this country and her colonies at the antipodes. We have become so accustomed to the great triumphs of genius and enterprise that it would seem as if they were beginning to pall upon us, for how otherwise can we account for it that the only notice taken of this has been the publication of the following laconic correspondence:

"Adelaide, October 21, 9.12 A. M.—The Mayor of Adelaide congratulates the Right Hon. the Lord Mayor of London on the opening of telegraphic communication between Australia and Great Britain, and trusts the communication so auspiciously begun may still further cement those feelings of loyalty and attachment to Her Majesty's throne and person which characterize the whole of the Australian provinces of the British Empire. 'God save the Queen.'"

"The Lord Mayor of London is much gratified by the reception of the telegram from the Mayor of Adelaide, and fully reciprocates the very kind expressions in his most agreeable communication."

THE total number of messages forwarded from Postal Telegraph Stations in the United Kingdom during the week ending Oct. 26, 1872, was 316,166—an increase on the corresponding week of last year of 58,175.

A man of letters—The postmaster.

WANTED—**Telegraph Instrument****Makers.**

Several first class workmen can obtain permanent employment upon arrival in San Francisco. Pleasant and convenient working rooms, nine hours per day, good wages, payable in gold, and plenty of "piece" or contract work, at good prices.

None but temperate, industrious and skilful workmen, who have had experience in the best Eastern factories, need apply.

Address, by mail,

Electrical Construction and Maintenance Co.,

No. 134 SUTTER STREET,

SAN FRANCISCO.

WILLIAM UNGER,

MANUFACTURER OF

TELEGRAPH INSTRUMENTS,

LIGHT MACHINERY,

MODELS, &c.

NEW HAVEN R. R. DEPOT,

Franklin Street, New York (Room 16).

EUGENE F. PHILLIPS,

MANUFACTURER OF

TELEGRAPH OFFICE WIRES

OF ALL DESCRIPTIONS,

Lock Box, 169.

PROVIDENCE, R. I.

With improved facilities for the manufacture of BRAIDED LINEN or COTTON COVERED OFFICE WIRE, either plain or paraffined, I am now prepared to offer to purchasers a SUPERIOR ARTICLE, in any quantity, on the most reasonable terms.

The Gold and Stock, and the American District Telegraph Companies have been supplied from my works with the larger part of the office wire used by them.

SEND FOR SAMPLE CARD.

For further information address as above, or

W. H. SAWYER,

General Supt. Am. Dist. Tel. Co.,

69 BROADWAY, N. Y.

16,000 MILES

OF

"JOHNSON'S" WIRE

USED BY THE

TELEGRAPHS OF THE UNITED STATES

DURING THE YEAR 1871.

This is a sufficient refutation of all the intimations thrown out by the Manufacturers and Importers of other Wires, reflecting upon the acknowledged superiority of the Wire manufactured by

Messrs. RICHARD JOHNSON & NEPHEW,**MANCHESTER, ENGLAND.****Their Works are the Largest in the World.**

The great advantage which they possess over other manufacturers is their patent process of drawing Wire in long lengths (averaging 1,200 feet).

All telegraphers know that, in nine cases out of ten, breaks in Wire occur at joints, hence the less joints the fewer breaks.

Messrs. RICHARD JOHNSON & NEPHEW furnish three fourths of all the Telegraph Wire used by the

ENGLISH GOVERNMENT.

This Wire is necessarily subject to the tests, etc., imposed by the English Post-office Department.

A large stock always on hand and for sale at the lowest market prices—both free and in bond.

TELEGRAPH LINES

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WIRE INSULATORS, BATTERIES,**INSTRUMENTS, ETC.****L. G. TILLOTSON & CO.,**

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Sole Agents for "Johnson's" Wire.

" " " American Compound Wire.

" " " Cauvet's Patent Screw Insulators.

" " " Sam'l O. Bishop's Insulated Wires and Cables.

" " " Brooks' Patent Paraffin Insulators.

Manufacturers of every description of

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THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

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Alleghany, Pa.,
Boston, Mass.,
Bridgeport, Conn.,
Buffalo, N. Y.,
Baltimore, Md.,
Chicago, Ill.,
Cincinnati, Ohio,
Columbus, Ohio,
Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
Philadelphia, Pa.,
Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
Washington, D. C.,
Worcester, Mass.,

*The Distinctive Features of these Systems of***Fire Alarm and Police Telegraphs**

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

*These Features combined form the***Only PERFECT, COMPLETE and RELIABLE System**

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM

AND

POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original *FARMER & CHANNING PATENTS*, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,**RELIABILITY and****ECONOMY**

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION OF CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

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TELEGRAPH ENGINEER,
AND MANUFACTURER OF
INSTRUMENTS,
BATTERIES,
AND EVERY DESCRIPTION OF
TELEGRAPH SUPPLIES.

BUNNELL'S PATENT REPEATER.

These instruments are now made in two different styles, at \$120 and \$185 a set, consisting of two Relays, two Sounders, two Keys and Governor.

JONES' LOCK SWITCH-BOARD,

a most compact and reliable Switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

EXCLUSIVE AGENTS OF

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KERITE,

OR

COMPOUND RUBBER COVERED WIRE.

SUBTERRANEAN & AERIAL WIRES,

OF THE

HIGHEST INSULATION.

We are now prepared to furnish, after an experience of three years, an Insulated Wire, which can be buried in the earth or exposed to rain and sun, or to the vapor of acids, without injury. Professor SILLIMAN, who has exposed it to the most destructive agencies, finds that it remains uninjured in an atmosphere of ozone, which would destroy gutta-percha in a few hours. It exceeds glass or any other known substance as a non-conductor.

We have made special arrangements to furnish this article for office purposes at a reduced rate.

ALSO, TO FURNISH

IRON CLAD CABLES,

of the usual size, with KERITE COVER, believing that it will exceed, in insulation for submarine purposes, ANYTHING HITHERTO MANUFACTURED.

We shall be happy to furnish estimates for any amount and size of cable, which will be found to compete with any other construction, both in quality and price.

We manufacture the Genuine ELECTROPOION BATTERY, with Patent Platina Connection, introduced by us eight years since; also, THE ALPHABETICAL OR DIAL TELEGRAPH, now extensively used in this and other cities for private lines, being easily and quickly learned by any one.

We offer for sale, among other novelties, a SOUNDER that will work practically with a single DANIELL cell, a BATTERY that does not require to be taken down but once a year, and the very best MAIN LINE SOUNDERS made.

Our CATALOGUE, embracing a large amount of new matter and description, is now ready for distribution.

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The superiority of the COMPOUND TELEGRAPH WIRE, compared with iron, consists in its LIGHTNESS, reducing by over fifty per cent. the number of poles and insulators required;

Relative TENSILE STRENGTH, homogeneity and elasticity—decreasing the liability to breakage from cold weather, sleet, etc.;

CONDUCTIVITY—insuring great improvement in the working of lines in any condition of the weather;

And in its DURABILITY, which greatly exceeds that of the best galvanized iron wire;

Altogether resulting in a very great reduction in the cost of maintaining and working telegraph lines, while, at the same time, insuring

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These Instruments will work in any circuit, and their performance is guaranteed.

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" " Mechanical " " "

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An egregious case of humbug of this sort has recently come to our knowledge, and the party thereto will be prosecuted.

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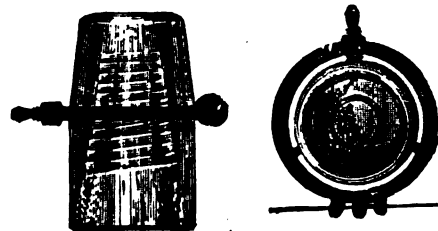
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CHESTER'S PATENT INSULATOR.



The undersigned solicits an examination of some of the reasons which have induced him to recommend to his patrons and friends the insulator exhibited above as the best and cheapest in use.

Experience has shown that, under certain conditions, glass is nearly a perfect insulating medium.

These conditions are simply that there should exist no conducting medium from the wire to its point of support over the surface of the glass, or through fissures or imperfections.

The insulating properties of the ordinary glass insulators, as also of hard rubber, earthenware or porcelain, are impaired by continuous lines of moisture passing around the surface of the glass, or through capillary or layer fissures, a connecting surface, coating of dust, or webs of insects. However slight a conductor may be afforded by these causes at each and every point of support, it must be remembered that many of them will aggregate to more than the conducting capacity of the main wire. Hence, the requisites of a perfect insulator are these:

1st. That the main wire shall be separated from its points of support of a non-conductor.

2d. That the length of non-conducting material or surface over which electricity must pass from wire to point of support should be as LONG as possible, while its width should be as SMALL as possible.

The insulator here represented with great simplicity and cheapness carries out the idea of the elongation and narrowing of semi-conducting surfaces to its utmost limit.

The contact of the conducting wire with these surfaces is only at three points, hence the transfer of current from the wire is almost infinitesimal.

As now manufactured, these insulators are further improved by being cast so as to reduce the surface contact internally between the glass and pin to about one third of that of the ordinary screw insulator, without decreasing its strength; the screw is cut upon the pin as it is inserted in the insulator, and a drip is provided which protects the internal surface from moisture. THE CONDUCTIVITY IS REDUCED FROM THREE INCHES TO THREE EIGHTHS OF AN INCH IN BREADTH.

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While great care and attention has been given to Instruments and Insulators, the conductor is put up of very inferior endurance and conductivity. The saving of a small percentage of expense, or the trouble and difficulty of testing a cumbersome article, has wired many lines with the rejected material of European Governments, only fit for fencing purposes. Many tons of such material now remain here, utterly unsaleable and unfit for use.

The researches of the able electricians of Europe have resulted in establishing a standard of excellence for Telegraph Wire far exceeding that with which we have heretofore been satisfied.

We extract from the minute and specific details a few of the requirements of a

STANDARD GOVERNMENT WIRE.

1st.—The wire supplied under this tender must be of the gauge known as No. 8, Birmingham Wire Gauge (diameter .170 of an inch.)

2d.—The wire to be highly annealed and very soft and pliable, and to be galvanized. The wire must be capable of elongating 18 per cent. without breaking, after being galvanized.

3d.—The wire to be entirely free from scales, inequalities, flaws, splits and other defects, and to be cylindrical.

4th.—No deviation greater than .005 of an inch either way from the prescribed diameter will be allowed.

5th.—The whole of the wire to be passed under and over three or more pulleys or fixed studs, placed in such position in the plan indicated as shall, in the opinion of the engineer, admit of the quality of the wire, as regards freedom from splits, being sufficiently tested.

6th.—The whole of the wire to be stretched two per cent. by machinery, and after being stretched to be coiled carefully, so as to contain no bends or indentations, but in all respects to resemble newly drawn wire.

In other specifications a breaking strain of 1,260 pounds or No. 8 wire is called for, and a capability of twisting upon itself eighteen times without rupture in a length of six inches.

We now offer for sale this Uniformly Excellent and Standard Wire, the best and most enduring Iron Conductor ever offered in this market, to which this system of tests is uniformly applied.

We shall designate it by the Trade Mark,

CHESTER, A 1,

and our customers ordering it may be sure of receiving an article always uniform, and always the very best.

The capacity or endurance of No. 9 is 21 to 23 twists upon itself in six inches of length, after having been subjected to the two per cent. of elongation.

In the presence of a number of Intelligent Contractors and Line Builders this wire has recently been subjected to

COMPARATIVE AND COMPETITIVE TESTS

with other well known wires now sold in this market. Of the various wires subjected to equal tests some broke at 7 turns, some at 14, and one at 17.

THE CHESTER, A 1, WIRE

never broke at less than 21 twists, and once at 29. The omission of the elongating process would increase the flexibility and tenacity.

Although the wire has been proved IMMENSELY SUPERIOR to that commonly sold, its price will closely approximate to that of the inferior article.

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Long Lengths; Superior Quality; Low Prices.

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The superior quality of this Wire consists in its LIGHTNESS,
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A Stock of these Insulators always on hand.
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For any number of Wires required.

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Having made arrangements with the Manufacturers for the
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constructed in the best and most substantial manner, and on
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Favorable arrangements will be made with line constructors,
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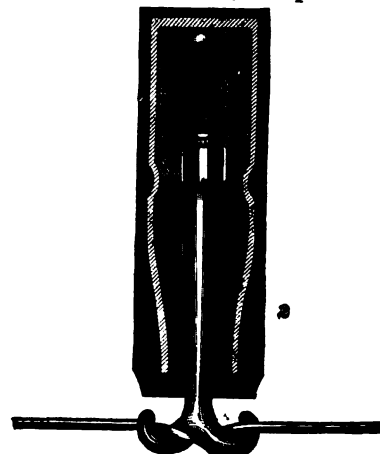
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The Telegrapher.

A Journal of Electrical Progress.

Vol. VIII.—No. 66.

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Whole No. 332

[FROM THE AMERICAN JOURNAL OF SCIENCE AND ARTS.]

On the Allegheny System of Electric Time Signals.

By PROF. S. P. LANGLEY.

(Concluded.)

It may be desirable to point out where the system pursued here differs from that in which a few signals are sent at stated hours, as at Greenwich. In the case of the time ball, for instance, dropped daily by a clock at Greenwich, mean noon, it is customary to compare the mean time clock which drops it with the sidereal time a few minutes before twelve. If it (the operating clock) be slow it is caused to gain, and if fast, caused to lose an amount needed to bring it to coincidence before the automatic action gives the signal.

The time of this signal is nominally exact, but in fact involves the variations in rate of the standard clock or clocks which are treated in the comparison as having their errors absolutely known. It is by no means meant to criticise this procedure, but to point out that as error must exist where the rates of the clocks are treated as constant intervals between observation, no less real accuracy is reached in the method employed here, in which (as the signals are being constantly sent) the signaling clock has no less nominal error at noon (for instance) than at any other hour.

When the sidereal clock has entered its beats upon the chronograph, during the time of observation, the record is not interrupted until, the mean time standard having been put into the same circuit, both clocks have automatically entered their time on the sheet together, and the break-circuit chronometer has done so also. The sheet being removed, and the breaks of the transit observer measured, the comparison of the various clocks with electric attachments are taken by measurement on the same sheet, and the others compared with the sidereal clock by noting coincidence of beats by ear. The resulting errors of all are then determined, reduced to a common epoch, and entered in a permanent record kept for the purpose in the following form:

(ΔT , δt , being the usual symbols for the respective corrections of error and rate):

Aug. 10, 1872. Time stars	$\left\{ \begin{array}{l} \eta \text{ Hercules,} \\ \alpha \text{ Camelopard.,} \\ \gamma \text{ Ophiuchi,} \\ \delta \text{ Hercules,} \end{array} \right\}$		$\left\{ \begin{array}{l} \text{A. E. F.,} \\ \text{observer.} \end{array} \right\}$	
	ΔT .	δt .		
At mean 9h.	7 ^m 32	+1 ^m 18		
Sidereal clock,				
Break-circuit chron.	+2 ^m 22 ^s 18	+3 ^m 30		
Chron. 3242,	+50 ^m 05	+3 ^m 11		
Mean time standard —	00 ^m 27	+0 ^m 46		

The mean time clock is here 0^m 27 fast by actual observation, but when the next comparison is made the following morning (at 21 hours) its error can usually be obtained only by comparison with another clock. If it be compared with each of the other clocks in turn, each, owing to the variations of its rate during the night, will probably give a slightly different result—but supposing all the time keepers equally reliable, the probable error will be less, in taking the mean of the four, than by any single one.

The above corrections for error and rate having been applied to the sidereal clock, a comparison is taken with it in the morning, and the resulting time of the mean time clock noted, on the assumption that the sidereal clock is an exact standard. The same comparison is made with each, after the respective corrections and rates have been applied, each being successively treated as an independent standard.

The results will then be entered in this form:

1872. August 10 ^d 21 ^h .	
Error of mean time standard, — 0 ^m 19 (by sidereal clock).	
" " " " — 0 ^m 05 " break-cir. chron.	
" " " " + 0 ^m 11 " chron. 3242.	
" " " " — 0 ^m 04 " its own rate.	

The mean or "adopted" error of the mean time standard is then — 0^m 17

In the absence of any more absolute criterion the time of the standard in this instance is assumed to be kept four one-hundredths of a second fast, and this value is adopted and treated as though it represented an error determined by direct comparison with the

stars. The clock will be compared again at 9 in the evening, and when this "adopted error" exceeds 0 25 such a change is made in the pendulum as will correct the error—not abruptly, but gradually during the ensuing twelve hours.

It is of course impracticable to stop the clock and raise or lower the adjusting screw twice daily for such minute corrections, and many ingenious devices have been proposed for effecting the change without stopping the instrument. One of these, as applied to a chronometer, has already been referred to; another (employed at Greenwich) involves the use of a small bar magnet permanently attached to the pendulum, and swinging with it; and still another the changing tension of a long spiral spring, which connects the "bob" with the clock case.

After considering many such plans, that adopted was the old one, familiar to most observers, of placing weights on the top of the bob of the pendulum, and then adjusting the bob by the screw till it runs with them approximately, after which a small increment or decrement of the weights will keep the clock under control. This plan has the advantage of employing as an agent gravity, whose effects can be reckoned on with more certainty than electricity or the tension of a spring. In common with the others it has, however, as commonly employed, the defect that when changes are made daily or oftener the rate of the clock cannot be ascertained, and that reliance must be placed at the times of comparison only on other clocks whose rates are undisturbed. The writer has, therefore, found it advantageous to use these weights quantitatively, by making them of a size such as to cause a gain of one second a day; .01 an hour, etc. Weights representing three or four seconds are kept on the top of the bob, so that their removal will retard the clock, if desired, to that amount.

A record is kept in which the comparisons in the tabular form above given are entered twice daily, the amount of the weights and the consequent rate which the clock so controlled would have had with an undisturbed pendulum being noted likewise.

The barometer and clock-case thermometer are also read twice daily, for the purpose of laying down curves representing the separate effects of temperature and pressure. Another curve, whose ordinates represent the algebraic sum of the corresponding ordinates of the first two, shows the combined results of both, for comparison with still another representing the clock rates. These are chiefly useful in the occasionally long intervals of cloudy weather which occur in winter. At such times the clock rates are obtained by interpolation from the curves, and "weighted" according to the degree of dependence on each clock before making up the final or "adopted error" of the standard. When observations are obtained daily, however, such precaution is needless.

Those who are aware of the number of patented devices for controlling distant clocks by electricity, may perhaps feel surprise that so little mention has been made of their use.

Some of these are of extreme ingenuity and much promise, and the English patents covering such points are alone to be reckoned by scores. Plans have been submitted to the writer by which the clocks along any number of miles of road could be set right, and brought to uniform time in a few seconds, by the operator at the observatory, and these plans appear feasible. The arrangements adopted here, as the reader will observe, do not greatly differ from those employed in telegraphic determinations of longitude, and in fact a prolonged examination of very many ingenious devices for directly controlling distant clocks led the writer to set them all aside, and to employ methods not differing in principle from those in use already, for purely scientific ends, in most American observatories.

Of the very numerous plans for controlling distant clocks that of Jones (now well known) appears to be the best, but even this is not quite reliable where the circuit is a long one. The clocks described have subsidiary apparatus, enabling them to send controlling currents on the Jones plan, but thus far its use has been confined to the observatory, has therefore been hitherto done by the sending of signals, through which distant clocks may be regulated, but without employing means for their control, and though this is done over a very extended field, a brief description of it, under the

three divisions into which it naturally falls, will suffice:

1st. The supply of time to watchmakers and jewelers. The "jewelers wire" passes through the Western Union telegraph offices and the stores of the principal jewelers of Pittsburgh. Beside each "regulator" is a telegraphic sounder, on which the observatory time is heard constantly ticking, and by which almost, if not quite all of the clocks and watches of the city are thus at second-hand regulated. There is, in this uniform and recognized standard, everywhere accessible, a convenience to watchmakers, of course, but still more to the public, as the discrepancies between clocks, public or private, which cause so many lost minutes in the day to each person in a city, that their aggregate represents a large draft upon the time of the business public, disappear.

Applications have been received from watchmakers in neighboring cities, and at a considerable distance from Pittsburgh, for this telegraphic supply of time, which it has not always been possible to accommodate, but which have been welcome, as showing a public appreciation of the utility of the work.

2d. The supply of time to railroads. The watchmakers and jewelers are in permanent telegraphic connection with the observatory by a wire which is devoted to their use—but distant cities, such as Chicago or Philadelphia, can be reached only by the wires of the telegraph or railroad companies, which are too valuable to be exclusively employed for this purpose. The method used on the Pennsylvania Central, and Pittsburgh, Fort Wayne and Chicago roads, will sufficiently illustrate the system as applied to railways.

A special wire connects the observatory with the office in which the wires owned by these roads unite. In this office is a small bell, which is struck lightly every second, in the manner described, and except for the pauses to designate the minute and hour, continues to sound uninterruptingly, affording to the conductors and other employees specially concerned in the time a means of ready comparison, even without entering the building.

At 9 and at 4, Altoona time (ten minutes fast of Pittsburgh), the Pittsburgh operator in charge connects the main eastern wire to Philadelphia, 354 miles distant, with the observatory, and for the ensuing five minutes the beats of the Howard mean-time standard are automatically repeated on similar bells, or on the customary "sounders" in Philadelphia, and in every telegraph office through which the road wire passes—all station clocks and conductors' watches being compared with it as the official standard. After five minutes the clock is "switched" by the Pittsburgh operator out of the main line wire, which is returned to its ordinary use.

A similar set of signals, lasting for five minutes, is sent at 9 and 4 of Columbus time (thirteen minutes slow of Pittsburgh) to all stations as far west as Chicago, inclusive, in the main western line (of 468 miles in length). At Philadelphia the time is repeated to New York, at Harrisburg to Erie (333 miles), etc. As it is thus sent not only over the main lines from New York to Chicago (nearly a thousand miles), but over a number of subsidiary or branch roads too great for enumeration here, and which form in the aggregate a much larger number of miles than the main trunk, it will be observed that a considerable fraction of the railway system of the whole country is prepared for using a single unit of time; as, though the names of "Philadelphia time," "Altoona" or "Columbus time" are not yet abolished over that part of our railway system referred to, every railroad clock and watch, and the movement of every train is regulated from a single standard—that of the clock in the observatory.

The advantages of this uniform and wide distribution of exact time in facilitating the transportation of the country, and in enhancing the safety of life and of merchandise in transit between the Western and the Atlantic cities, seem to be sufficiently evident. The fact that the system described in this article has obtained the extension it has, within three years from its commencement, will, it may be hoped, justify the belief that its use has proved not only valuable to railways but an added security to the safety of the public.

3d. Supply of time to cities. At present arrangements are in progress for regulating the principal public clock of Pittsburgh (the turret clock of the City Hall,

about two miles from the observatory), which it is intended shall strike every third hour on the bells of the fire alarm, and probably also in the various police stations. As the mechanism for doing this is still in course of construction, and may yet be modified in trial, it would be premature to speak of it, especially as its success has not yet been proven in practice here. The city clock will automatically report its own time to the observatory by a special wire, and it is probable that in controlling its rate from the observatory the "Jones" system will be used.

The necessity of a uniform standard of time over the whole country, which was alluded to in the outset as one of growing importance, has not been further directly touched upon in this article, which is yet as a whole devoted to describing the means of meeting it. The evident tendency, in thus sending the time from one standard over so large an extent of territory, is to diminish the number of local times, and so prepare the way for a future system, in which, at least between the Atlantic and the Mississippi, they shall disappear altogether.

A step in this direction has been contemplated by the managers of the roads uniting New York, Philadelphia, Pittsburg and Chicago, who have intended to use the time of the meridian of Pittsburg between the two extreme points mentioned, running all trains from New York to Chicago by this time alone, in place of using successively the local times of Philadelphia, Altoona and Columbus, as at present. Such a change would have already taken place during the last summer, except for an unexpected cause of delay, on whose removal it will be effected.

The labors of this and of other American observatories are tending to the same important end—that of the ultimate adoption of some single time for the country east of the Mississippi, by which not only the railroads but cities and the public generally will regulate themselves. What point shall be chosen is of less importance than that some one shall be used and universally.

The subject is one which has hitherto attracted little public attention, but it does not seem unsafe to make the assertion that the causes which have almost insensibly effected such a revolution in England, will in a few years more bring it about here.

Allegheny Observatory, Allegheny, Penn.,
Sept. 22, 1872.

Correspondence.

We do not hold ourselves responsible for the opinions of our Correspondents. Our columns are open to free discussions on all Telegraphic subjects, without distinction of person or opinion.

No notice will be taken of anonymous communications.

Public Interest and the Telegraphic Fraternity Opposed to a Government Telegraph.

CHICAGO, Nov. 15.

TO THE EDITOR OF THE TELEGRAPHER.

SEVERAL months have passed since I have contributed to the columns of our paper, THE TELEGRAPHER. This has been not from a lack of interest, but on account of the occupation of my time by other business and duties.

The point has been reached when telegraphers should speak boldly in regard to the postal telegraph scheme, which it is intended to endeavor to force through Congress at the coming session. The two leading papers of this city, the *Chicago Times* and *Tribune*, have spoken decidedly in opposition to the scheme, as placing a dangerous instrument in the hands of a political organization. The effect of their warnings will not perhaps be so great as they would be if these newspapers were on the popular side politically. The *Inter-Ocean*, the administration organ here, has, I suppose, satisfied its conscience, as a supporter of the administration, by reprinting an article from a Philadelphia newspaper in support of the project for a Government acquisition and management of the telegraphs of the country. This is the position of the press on this important subject.

It has been represented by advocates of the Government telegraph schemes, that a majority of the telegraphers themselves were personally favorable to one or the other of them, and did not coincide with the policy of THE TELEGRAPHER in opposing Government as well as corporate monopoly of this great and vitally important interest.

I have, within the past year, met and conversed on the subject with at least one thousand telegraphers in the West, in Illinois, Wisconsin, Iowa, Kansas, Missouri and Nebraska, and I think it but justice to say that of the whole number but one man has expressed himself as favorable to the Government telegraph system, and the only argument advanced in its favor by him was that "he thought the Government would pay him better."

Another point it might be well to state, and I refer to the Hon. Senator sometimes called "Subsidy," or the Hon. S. C. Pomeroy, of Kansas. I select him because he has been one of the most zealous advocates of the Hubbard scheme. It is stated at Atchison, his home, that while standing on the steps of the First National Bank, some time since, he made a statement that he had just received a message that his stock in the Cable Company had been sold for \$250,000. Of

course the Hon. Senator had a right to sell, and was fortunate in owning such valuable telegraphic property, but it certainly is calculated to create an unfavorable impression, in view of the fact that the Hubbard bill grants to the organization stocks to the amount of \$1,000,000 (to be practically guaranteed a dividend of ten per cent. by the Government) to defray the expenses of organization.

I do not believe that any honest man, without pecuniary or political aspirations, demands or desires that this interest, which, in partisan control may, and unquestionably will become so dangerous an instrument, shall be placed in the hands of Government officials. I would suggest that the first duty of an organization of telegraphers (not, however, to be controlled by any company) should be a petition, signed by the working force of the telegraphs of the company, setting forth their views in the matter, and their opposition to such centralizing schemes. I believe that such an expression would have weight and influence, and that there is yet honesty and independence enough in Congress to prevent so great a wrong.

A Severe Arraignment of the Western Union Telegraph Company.

TO THE EDITOR OF THE TELEGRAPHER.

I SEE by your last that somebody is still railing against the glass insulators. He might as well bark at the moon. Every part of the Western Union Company is managed as a "job." The Western Union is not only a "creature of the Stock Exchange," but is a creature of some fraud, wherever you may find it in lumps big enough to pay for lugging off.

Look at the instruments it supplies. There is nobody to look after the interests of the public in this matter, for it is the public who is cheated in all this jobbery—the public and the employees. Since it is all a mess of jobbery the natural result is deterioration in every direction, miserably unreliable service in general. The officers and stockholders have no interest except to feather their nests. It is impossible to bring about any improvement, or even to stem the downward tendency. Even if there be an officer who is inclined to give ear, there is no one to execute.

Except where it has sharp opposition the Western Union is very unsatisfactory to the public, and it is no wonder there is a cry for a change—even for a postal telegraph. When people become desperate they think any change will be for the better. Any institution which shows no more interest in its employees than this concern certainly can have little thought of its duty toward the general public. The sacred trust of dealing out impartiality, in the transmission of telegrams, has long been dead and buried, and hardly exists in memory to-day.

There is but one way to get better things—but one ground for hope—and it is through the employees, who must come to the rescue and save the telegraph from being at once their own curse and the tool of successful politicians, financiers and speculators.

LITTLE THINGS.

The Franklin and Southern and Atlantic Washington Office.

WASHINGTON, D. C., Nov. 13.

TO THE EDITOR OF THE TELEGRAPHER.

THINKING it might be of interest to some of the fraternity to know how we are getting on down in this section, I am happy to inform them that in the Franklin and Southern and Atlantic office we were never in better condition than at present for handling business, under the able management of Mr. F. T. Bickford, assisted by Mr. E. L. Bugbee as chief operator, and Mr. R. L. D'Akers as night manager, forming the best array of electrical talent this office has ever seen. We consider ourselves prepared to meet any emergency. Mr. Bugbee, though quite young, compared to many prominent electricians, has no superior in handling business, testing wires, &c. Mr. D'Akers understands his position well and fills it admirably, and though self praise goes but little ways I do not hesitate to say we have the model office in this part of the country. Let's hear from some one else.

Personals.

Judge O. H. PALMER has resigned the position of Vice-President of the Western Union Telegraph Company, to assume the position of chief of the law bureau of the Mutual Life Insurance Company of New York City.

Mr. A. M. FLEMING has been transferred from Sidney Station, Nebraska, to Julesburg, as agent and operator of the U. P. R. R.

Mr. H. SNYDER has been appointed agent and operator of the U. P. R. R., at Sidney Station, Neb.

Mr. W. A. BASHE has been transferred from Sidney, Neb., night office, to Antelope, Wyoming Territory, as agent and operator of the U. P. R. R.

Mr. T. F. MARTIN has resigned as agent and operator of the U. P. R. R. at Antelope, W. T., and gone east.

Mr. R. CONWELL fills the vacancy as night operator at Sidney, Neb., caused by the transfer of Mr. W. A. BASHE.

Mr. W. L. REED has resigned his situation as night report operator of the Council Bluffs, Iowa, Western Union office, and gone home to make a short visit to his friends.

Mr. W. SEDGWICK has been appointed night operator at Council Bluffs, Iowa, Western Union office, in place of W. L. REED, resigned.

Mr. JOHN C. FLOOD, formerly of the B. and M. R. R. at Ottumwa, Iowa, has accepted a position with the Western Union Company at Columbus, Ohio.

Mr. C. M. MILLER has resigned his position at Bigelow, Mo., and accepted a situation with the Hawkeye Telegraph Co., at Mason City, Iowa.

Mr. WARREN COMBING is superintendent of telegraph and chief train despatcher of the Eastern division of the Missouri Pacific Railroad (which is leased to the Atlantic and Pacific Railroad), with headquarters at St. Louis, Mo.

Mr. W. P. SLOCUMB is the day train despatcher, and Mr. E. B. POPE night train despatcher of the Eastern division of the Missouri Pacific R. R.

Mr. H. G. CLARK is day train despatcher, and Mr. M. C. NICHOLS night train despatcher of the Western division of the Mo. Pacific R. R. office, State Line, Kansas City.

Mr. J. P. KLUNK has resigned his position with the Missouri Pacific R. R. and returned to his home in Ohio.

Mr. P. S. TODD has resigned his situation as ticket agent and operator for the Burlington and Missouri River R. R., at their depot, Council Bluffs, Iowa, to go into other business.

Mr. CHARLES SLOSSON has been appointed agent and operator of the B. and M. R. Railroad, at Council Bluffs, Iowa.

Mr. M. VAUGHAN has been appointed night operator of the B. and M. R. Railroad at depot, Council Bluffs, Iowa.

The Telegraph.

By Cable.

CELEBRATION OF THE OPENING OF THE AUSTRALIAN TELEGRAPH COMMUNICATION.

LONDON, Nov. 16.—The event of the opening of the Australian telegraph line was celebrated by a grand banquet, which was given in the Cannon Street Hotel last night.

Three hundred persons were present at the entertainment, the Right Honorable the Earl Kimberly, who has served as Under Secretary of State for the Colonies, presiding.

The Boston Fire and the Telegraphs.

SOME additional particulars of interest to telegraphers, in connection with the recent great fire at Boston, have come to hand:

At an early hour on Sunday morning all communication between New York and the main offices of the Western Union and Franklin Companies in that city was interrupted by the destruction of the lines through the locality devastated by the fire, and the destruction of the Western Union offices was apparently so imminent that the apparatus and office furniture were removed, but telegraphic communication was not interrupted, temporary offices being established at the railway depots and other convenient localities beyond the limits of the conflagration. In addition to the men and material despatched on Sunday from this city, others were despatched from Portland, White River Junction, and other places on the Western Union lines. On Monday morning communication was partially reestablished from the Western Union main office, and on Tuesday the headquarters of both companies were once more in full operation.

Previous to the fire two sets of the Stearns duplex instruments were in operation between Boston and New York, but the pressure of business was so great that two additional sets were forwarded from this city Monday afternoon, and were received and in operation at the office in Boston at 9 o'clock on Tuesday morning, greatly increasing the facilities of the company.

There was, of course, an immense pressure of telegraphic business consequent upon the calamity.

The *Boston Journal* of Nov. 15 says:

"The Western Union Telegraph Company have kept employed one hundred line builders night and day since the fire, under the direction of the general and district superintendents, in repairing old and building new lines. Permission was granted by the city authorities to place poles and wires through the burnt district to the Albany depot, and the men have worked night and day in carrying through this object. Previous to the opening of this route through the burnt district the general office was thronged with an excited multitude, waiting their turn to pass in despatches to the company, while every wire running South and West was destroyed. The company, however, were enabled to transmit many of the despatches for the South and West by indirect routes through Portland, Montreal, White River Junction, &c., also by keeping an express between the main office and the various depots. The demand upon the telegraph company, of insurance companies and others who have suffered from the fire, could not, how-

ever, be met until the establishment of the route through the burnt district, which, as it now exists, will ensure prompt communication in the present crisis, and which is of the utmost importance to the mercantile and insurance interests of the city. The company are now doing the enormous business crowded upon them with promptness, they having called a large force of operators from New York and elsewhere to assist during the emergency."

What Can Be Done on the Combination Telegraph Instruments.

On Wednesday, Nov. 13, there were sent from New York to Boston, over one wire, on the Combination Printing Instrument, by Mr. T. M. MILLER, 703 messages between 8.30 A. M. and 5.30 P. M. These messages were not of the sort sent over a down town broker's wire some months ago, containing but six or seven words each, including address, signature and check, and the same message repeated to many addresses, but were of the regular average length of thirty-five words to a message, exclusive of number and check.

This is not the full capacity of the Combination Instrument by any means—it was not constantly employed in the above instance—but the feat undoubtedly excels any of the kind that has ever occurred in practical telegraphy.

Telegraphic Communication between Peru and Panama.

A CORRESPONDENT of the *New York Herald* writes from Lima, Peru, under date of Oct. 21, that

"The news that the telegraph had connected Jamaica with Aspinwall, and placed us within five days' hail from the United States and Europe, was received with general congratulation and rejoicing. Commercial cities are enthusiastic in their expectations, and the Government is reported to be favorably disposed towards subsidizing the submarine line which it is proposed to lay between Payta and Panama. With Payta we have had telegraphic communication for two years. Mr. Studdy Leigh, who has for a long time been identified with the proposed undertaking, is now in Chile, but on his approaching arrival here it is hoped that he will find it possible to conclude an advantageous arrangement with the Government. We could then 'wire' direct to Europe and the United States."

Submarine Cables.

CABLE property, after a long period of neglect, has at length come into marked favor with investors as well as with speculators. The successful reparation of the Australian cable has been the prominent cause of this—not merely on account of its being another proof that cable property is not any more precarious than any other, but because of the substantial increase it has given to the receipts of the Eastern companies, and most of all to the British Indian Extension, which line is said to be now earning 20 per cent. dividend. We long ago predicted that this line must be another Anglo-Mediterranean from the similarity of its position, and we expect that when the amalgamation of the lines beyond India takes place, the extension will, like the Anglo-Mediterranean, be taken in at double the amount of the others. We foresee no end of work for the Construction Company in the duplication of cables as traffic increases. In the case of the British Indian extension, the extra traffic from the opening of the Australian line would alone pay for a cable, assuming the money to be raised at 7 or 8 per cent.—*The Railway News*.

Heavy Damages Awarded Against the Western Union Telegraph Co.

In the District Court at Philadelphia, Pa., on Friday, Nov. 15, in the case of Passmore vs. the Western Union Telegraph Company, for alleged negligent error in the transmission of a message, whereby the plaintiff lost an opportunity to sell a tract of land in West Virginia, a verdict was given for the plaintiff for \$4,000.

Foreign Telegraphic Notes.

THE new telegraph line in Japan will be opened in state by the Emperor as soon as completed.

The directors of the China Submarine Telegraph Company have given notice that the receipts for the year ended June 30th enable them to declare a final dividend of 4s. per share, making, with those already paid, a distribution of 8 per cent. per annum.

The advices from Buenos Ayres state that, according to expectation, in about a couple of months the completion of some telegraph lines which are in progress of construction from Valparaiso along the West Coast toward Panama, will bring Buenos Ayres within five days of Europe. The Transandine telegraph from Valparaiso to Buenos Ayres was in steady operation. The distance is 1,238 miles, of which 1,058 are in Argentine, and 180 in Chilean territory, and the line includes two snow cables of thirty miles over the Andes.

The defect in the Pentland Firth telegraph cable has been discovered. It is reported to have occurred a short distance from Walls, and the steamer *Caroline* is at present in the neighborhood waiting the first opportunity of fine weather to effect the repair.

The traffic receipts of the Eastern Telegraph Company for the month of October amounted to £31,409, against £27,251 in the corresponding month of 1871—showing an increase of £4,158.

The special resolutions for effecting and completing the amalgamation of the British-Indian Submarine; Falmouth, Gibraltar and Malta; Anglo-Mediterranean; and Marseilles, Algiers and Malta Telegraph Companies, have been unanimously confirmed by the shareholders of the several companies.

Telegraph shares, which have been much neglected latterly on the Copenhagen Exchange, and followed a downward tendency, have now become an object of speculation, and are rising rapidly in value. The reason assigned for this improvement is that the Etatarath Herr Tietjen, who has returned from a journey abroad, has succeeded in persuading the President of the French Republic to grant him the long wished for concession to lay down a submarine telegraph cable between a spot on the north coast of France—probably at Dunkirk—and Fanoe, on the coast of Jutland. Great things are expected in Denmark from this new line, as then the traffic with France and the south of Europe, as well as the transit communication with North America, and by-and-bye with Brazil, will be liberated from the present onerous and expensive necessity of making use of the German telegraph system. At the same time we learn from Copenhagen that the Siberian land lines, which have been broken, and the traffic interrupted by the late inundations, have been repaired, and are again in full working order—which was not expected to be accomplished before the ensuing spring.

Major-General Von Chanvin, the Director-General of the German telegraph department, has tendered his resignation, and, at his own request, been placed at the disposal of the War Office at Berlin for active employment in the army.

The Northern Telegraph Company announce that the Siberian land lines, which had been interrupted for some months, having now been reestablished, their communication with China and Japan is again in perfect order, and that messages for those countries are accepted at all postal stations at a uniform rate.

The India Rubber, Gutta Percha and Telegraph Works Company's steamer *Dacia* left Silvertown on Thursday with a submarine cable, to be laid direct from Spain (Bilbao) to the Land's End, Lizard Point, the company holding a concession to lay this cable from the Spanish Government.

The total number of messages forwarded from postal telegraph stations in the United Kingdom during the week ending the 2d of November, 1871, was 312,054—an increase on the corresponding week of last year of 73,786.

The Eastern Telegraph Company, with reference to their announced intention to lay a duplicate cable to Vigo and Lisbon, have intimated that when the cable is laid, early in the ensuing spring, their tariff to Spain and Portugal will be materially reduced. They are also endeavoring to negotiate with India and other Governments for the adoption of a tariff which will enable the public to pay for the number of words sent, whether one or more—a system which is in successful operation on the Atlantic lines.

Telegraphic and Electrical Brevities.

At a meeting of the Citizens' Relief Committee in Boston, on Friday, Nov. 15, a communication was read from the Western Union Telegraph Company, tendering the free use of their wires to the Mayor, Council and Relief Committee.

A patent hot water heating apparatus, manufactured by Baker, Smith & Co., of New York, has recently been placed in the operating department of the Western Union Company's Albany, N. Y., office, adding very materially to its comfort.

A contract for a telegraph line between Longville and Dallas, Texas, has been let, and a large force is now at work on it.

A contract for a telegraph line from Marshall to Texacoma, Texas, has been let, and work commenced on it vigorously week before last.

Complimentary.

Mr. W. E. SMITH, who succeeds Mr. J. W. Strachon as agent of the Western Union Telegraph Company in this city, arrived here on the steamer *Sacramento* and took charge of his office yesterday. Persons who have business at the telegraph office will find Mr. Smith as attentive and agreeable as his predecessor. The San Diego office is fortunate in having such gentlemanly agents.—*The (San Diego, Cal.) Daily Union*.

Perpetual Motion Seekers.

NUMEROUS inquiries, both in person and by letter, are made from time to time at the Patent Office, and also of the president and various cabinet officers, in regard to a supposed prize of \$1,000,000, reported to be offered by the Government for the discovery of perpetual motion. No such offer has ever been made by the Government; but, though the absurd statement cannot be traced to its source, it seems to find an astonishing number of believers throughout the country, and undoubtedly stimulates effort in this direction on the part of a very numerous class of persons who are still engaged in making the apparently hopeless attempt.

Death of Emile Provost.

M. EMILE PROVOST, a French scientist and an inventor of considerable note, the originator of several improvements in electric apparatus which have been favorably received, died last week by his own hand in this city. He had taken up his residence here, and had, it is said, at the time of his death, completed an electro-motor, which, not working satisfactorily, his disappointment at the result, and the devil of drink, brought upon him the sad state of mind in which he terminated his career. These causes were, it is said, the more likely to unsettle his reason from the effects of an injury to the head received by M. Provost some time ago, and from which he had never fully recovered.—*American Artisan*.

New Patents.

For the week ending October 29, and bearing that date.

No. 182,569.—ELECTRO-MAGNETIC METER. Samuel Gardiner, Jr., New York.

A spring detent lever, engaging with the regulation fly of a clock movement, is withdrawn by the armature of an electro-magnet, thereby allowing the clock work to indicate, on suitable dials, the time during which an electrical current is being employed, and consequently, for a determined battery power, the amount of electricity expended. A pin on the stop winding wheel, acting on lever when the clock has nearly run down, breaks the circuit, so as to insure registration of the actual duration of the electrical current.

1. The combination and arrangement of an electro-magnet and its armature with the releasing device of a clock mechanism for indicating upon a dial the time during which an electrical current is in action.

2. The lever *b* or its equivalent, in combination with the conducting connection *k* and pin *c* on the stop wheel *B* for breaking the electrical connection, as and for the purpose set forth.

Recent British Patents.

No. 1,207.—Geo. Little, Rutherford Park, New Jersey, U. S. A. ELECTRIC TELEGRAPH APPARATUS, AND IN CIRCUITS EMPLOYED IN TELEGRAPHING. Dated April 22, 1872.

Telegraphing by perforating paper. The roller is grooved, and a thin blade therein lifts off the paper. The electro-motor has a screw and spring friction regulator. The stylus or pen is vibrated by an armature, and the magnets are adjustable. A needle in a tube of alcohol forms the galvanometer. The electric currents are regulated by rheostats of peculiar construction. The armature is vibrated by the action of a constant current, and the main line current in opposite directions, and the latter, when passed through the same helix, neutralizes the constant current. The armature is made of sheet metal and gives a sound. Two spools are used, each core of an electro-magnet. The line circuit in a normal condition is charged; the distant record is made by short circuiting; submarine cables are worked by the condenser at the distant station through the perforation of the paper at the transmitting station, and the line is charged when paper breaks the circuit. The characters are received on a sheet of chemical paper in a continuous line. The perforating instrument is a range of punches and a range of keys, the latter connected to a reciprocator, and the key depressed selects its punches and perforates a complete character.

No. 304.—L. Rault and E. Chassan, Rue du Four, St. Germain, No. 70, Paris. TELEGRAPHIC PRINTING APPARATUS. Dated January 31, 1872.

The band of paper passes over the point of junction of the two halves of a divided hollow cylinder, filled with ink, which leaks through the division, and thus marks the paper. The armature is regulated by a spring, which receives its action from a cam mounted on an axis actuated by a button. The spring is more or less stretched in proportion as a part of the cam more or less near its centre is presented to it.

No. 255.—A. M. Clark, Chancery lane, Middlesex. IMPROVEMENTS IN ELECTRO-MAGNETS. Dated January 26, 1872.

1. Novel arrangements of the electro-magnet relay (patent No. 1,920, 1869). 2. The several applications of said relay. 3. Several methods of discharging the line, viz: *a*, by a vibrating pallet, with one portion of the pallet connecting the line with the earth; *b*, by a current from a local battery acting transversely to the line and passing through supplementary coils; *c*, on transmission by a discharge battery, and small additional relays, to reduce the currents in one or other direction, and prevent the line becoming overcharged; *d*, suppressing a discharge or return current by means of any suitable or additional relays for producing the effects desired.

No. 2,890.—A. M. Clark, 53 Chancery lane, Middlesex. IMPROVEMENTS IN ELECTRIC TELEGRAPH APPARATUS. Dated October 27th, 1871.

For the transmission by the same wire of several messages at the same time, several recording instruments are put in motion by two shafts, actuated by clock work mechanism, the marking device of each instrument consisting of a rotating helix, receiving ink from a suitable pad, and operated by the one shaft, whilst the paper strip is drawn along by the other shaft. The transmitting apparatus comprises: 1. A manipulator, consisting of a series of long and short keys for dashes and dots, and in combination. 2. A distributor, consisting of a cylinder, having a metallic surface, on which travels a roller or style, and divided into as many parts as transmitters, each divided into surfaces and spaces, four surfaces being provided for each transmitter. They are insulated and connected by as many wires to the long keys of the manipulator, each of these four divisions being again divided by an insulating partition, the half divisions corresponding with the short keys. The contact of the wheel or style gives passage to the current and marks the paper, which is brought into contact with the inking device by a peculiar arrangement of electro-magnets. Electro-chemical recording instruments may also be employed. For long conductors a peculiar arrangement of relays is described.

No. 2,759.—A. V. Newton, Chancery lane, Middlesex. IMPROVEMENTS IN ELECTRIC BATTERIES. Dated Oct. 17, 1871.

The surface or carbon exposed to the action of the exciting fluid is enlarged, and certain chemical substances are submitted to the action of the exciting liquor.

No. 4.—H. Highton, M. A., Putney, Surrey. IMPROVEMENTS IN ELECTRIC TELEGRAPHY. Dated January 1, 1872.

Means for submarine and subterranean telegraphy through uninsulated wires.

Born.

ANNETT.—At Cheyenne, Wyoming Territory, Oct. 28, to the wife of U. F. ANNETT, a boy.

SHANKS.—At Sherman, Wyoming Territory, Nov. 11, to the wife of T. N. SHANKS, a boy.

THE TELEGRAPHER

DEVOTED TO THE INTERESTS

OF THE

TELEGRAPHIC FRATERNITY.

J. N. ASHLEY, Publisher and Editor.
FRANK L. POPE, Associate Editor.

SATURDAY, NOVEMBER 23, 1872.

The Approaching Session of Congress and the Government Telegraph Schemes.

THE Presidential election is over, the administration of General Grant has received popular endorsement, and two weeks from next Monday the final session of the present Congress will commence, and finish up the business of the first Presidential term of the present incumbent of that office. With political matters THE TELEGRAPHER has no concern, and it is not its province to express approval or disapproval of the political policy of any administration. With only one question on which the present head of the Government has taken sides is it proper that this paper should take issue with him, and that it does most decidedly.

In his annual message to Congress a year ago, the President unequivocally endorsed the recommendation of the Postmaster-General for the assumption of the ownership and management of the telegraphs of the country by the Post-office Department, as a Government monopoly. So little in sympathy with these recommendations was the majority of the House of Representatives, that instead of referring the matter to a special committee, as was desired and expected, it was referred to the Standing Committee on Appropriations. This committee spent some time in investigating the subject, but did not finally make a report or recommendation, and it went over for the session.

It is now well understood that the Postmaster-General will embody in his report, which will accompany the message of the President upon the reassembling of Congress, an elaborate argument in favor of his former recommendations on this subject, and that Mr. R. B. LINES, his private secretary, has for some months past been engaged in collecting statistics and material upon which this argument is to be based. It is also probable that the President will again give to the project the weight of his endorsement. Fortunately up to the present time the question has not been made a party issue, and the proposition to establish a Government telegraph monopoly is opposed by leading members of all political parties.

It is hardly probable that any definite action can be had at the coming Session. It is the short Session, continuing only three months; and although the overwhelming popular endorsement of the present administration has very much simplified its prospective duties, there can hardly be time for action upon a matter which cannot be disposed of without prolonged and earnest debate. What is really expected to be accomplished is probably to put the subject in a favorable position to be brought before the session of the new Congress, which will commence in December, 1873.

We do not propose now to restate or reiterate the arguments against this proposed monopoly, which we believe to be dangerous and fraught with evil, and which we hope the wisdom of the present and future Congress will prevent from being realized. It is not a matter of surprise that the Postmaster-General should be strongly impressed in favor of a measure which will add so largely to the importance and influence of his department, but we cannot understand how any disinterested and intelligent person can, after examination of the subject, favor it—much less can we understand how any telegrapher can advocate or favor it. As a matter of fact, and we believe our means of ascertaining the real sentiments of the fraternity are not excelled, we think that at this time but few of them do favor it. It has been said that THE TELEGRAPHER does not represent the general opinion of the fraternity upon the Government telegraph monopoly schemes. This we are confident is an error. It is true that at first a good many telegraphers were inclined to look favorably upon it, but the number of such has steadily decreased, until now, outside of Washington—whereof, of course, the Government is regarded as the embodiment of all inter-

ests—but few intelligent telegraphers are found favoring either of the Government telegraph monopoly schemes which are seeking Congressional endorsement. That THE TELEGRAPHER has been largely instrumental in effecting this change of opinion on the part of the fraternity is no doubt true. We have opposed, and shall continue to oppose any telegraphic monopoly, in the interests of the public and of the profession, honestly, and with such energy and effectiveness as we may. Very probably, as has been intimated to us more than once, our individual interests might be advanced by taking the other side of the question, and giving to the proposed monopoly the aid of the influence of the only independent telegraphic journal in the country. In this matter we are acting on principle, and until we are convinced that our present views are erroneous, shall not allow suggestions of personal interest and advantage to influence the course of this paper.

In a communication to a Washington newspaper some time ago (of which, by the way, we only recently heard) it was stated that the editor of THE TELEGRAPHER was in some way connected with the Associated Press, and therefore favored the Western Union policy in this matter. The absurdity of the idea that we oppose a Government telegraph monopoly in the interest of the Western Union Telegraph Company will be fully appreciated by those who understand our relations both to that company and the Associated Press. The writer must have been exceedingly hard put to it for arguments in favor of his hobby, or for neutralizing the influence of THE TELEGRAPHER, to make such statements. As before said, we oppose the project on principle, and not in the interest of any telegraph company or combination.

We shall watch closely the movements at Washington of the telegraph monopoly advocates during the winter, and our correspondent, CAPITOL, will, upon the assembling of Congress, renew his weekly letters, in which "Congress and the Telegraph" will be fully and fairly reported and considered.

Celebration of the Completion of Telegraphic Communication with Australia.

On Friday, Nov. 15, the completion of telegraphic communication with the antipodes was celebrated by banquets at Adelaide, South Australia, and in London. We have not received the full reports of these pleasant affairs, but they were well attended, and the two localities so widely separated were in telegraphic communication while they were in progress.

While the Australian banquet was being held the following telegraphic correspondence, between the Mayor of Adelaide and Mayor HALL, of this city, took place:

"ADELAIDE, South Australia, Nov. 15, 1872.

TO THE MAYOR OF NEW YORK.

The Mayor of Adelaide congratulates the Mayor of New York on the occasion of the banquet celebrating the completion of telegraphic communication around the world.

THE MAYOR OF ADELAIDE."

To which Mayor Hall, with an apt poetical quotation, replies:

NEW YORK, Nov. 15, 1872.

TO THE MAYOR OF ADELAIDE.

"To the banks of the Hudson fair Adelaide has bled" with her cheering greeting. The metropolis of the Western Hemisphere congratulates the new metropolis of the Eastern one upon this full cement of Anglo-Saxon and international friendship.

THE MAYOR OF NEW YORK."

The United States Telegraph Manufacturing and Supply Co.

In our advertising columns will be found the advertisement of the United States Telegraph Manufacturing and Supply Co., of Philadelphia. This is a chartered corporation, which is engaged in the manufacture of telegraph instruments and apparatus of every description, for which purpose they have in operation the most improved machinery. This company has been fortunate in securing the services of Mr. WM. D. SARGENT as business manager. Mr. SARGENT is a telegrapher of many years' experience, and an electrician of superior ability. He has for some time past been engaged with Mr. SUMMERS, the electrician of the Middle Division of the Western Union Telegraph Company, as assistant, which position he resigned to engage in this enterprise. He has made the science of electricity and the art of telegraphy a study, and his services in connection with telegraphic manufacturing cannot be overestimated.

This company has also secured the valuable services of Mr. DAVID BROOKS, of Philadelphia, as consulting engineer, and science and skill are alike employed in the production of good and satisfactory work.

The Marriage of Mr. Fred. H. Lawrence.

WE were much pleased last week at receiving a call from our esteemed friend Mr. FRED. H. LAWRENCE, Supt. of Telegraph, of the Lawrence, Leavenworth and Galveston Railroad. Mr. Lawrence's trip to the east was to complete a marriage contract, which was happily accomplished, as recorded in THE TELEGRAPHER of last Saturday. He and his amiable bride have the sincere wishes of their numerous friends and acquaintances for their continued happiness and prosperity, and of none more so than the editors of this paper.

Correction.

In printing the reports of the Treasurer and Secretary of the Telegraphers' Life Insurance Association, last week, there were some errors and omissions. The paragraph at the end of the Treasurer's report should read: "And the propriety of some acknowledgment from this meeting to the company *hardly* needs to be suggested." The word italicized was omitted. In the Secretary's report the paragraph in regard to reinstatement of delinquent members should have read that all had furnished "new" health certificates and paid up back dues, etc.

Explanatory.

THE pressure on our advertising columns is so great that we have been obliged to take out temporarily the list of Agents from the Prospectus of the *Telegrapher*, and omit some other advertisements. The enlargement of the paper is an evident necessity, and until it is made subscribers and advertisers must have patience.

Another Protest Against Telegraph Poles in Cities.

WE last Sunday called attention to the fact that the Western Union Company had committed another outrage upon the rights of individuals by erecting a number of mammoth poles on Fourth street, between Market and Chestnut streets. Since that time we have ascertained that that corporation has done the same thing on Market street, from the Schuylkill River to Third street; on Fourth street, from Market to Chestnut; on Front and Christian streets; on Thirteenth, from Market to Sansom; on Sansom, from Thirteenth to Fifteenth, and on Fifteenth to Market street. The poles are from fifty to sixty feet in height, and from forty to fifty inches in circumference, and each has, near the top, eight or nine cross-arms, about nine feet in length, those at Fifteenth and Sansom being not more than twenty feet apart. Heretofore no company has ventured to erect a telegraph pole on Chestnut street, and it was tacitly understood that that thoroughfare should be exempt from the nuisance, but the Western Union has thought best, for reasons known only to its managers, as it already has poles on Market and Third streets which answer the purpose, to obstruct the sidewalk. The presumptuous corporation has encumbered our highways with these bulky, unornamental and objectional poles, as far as we can ascertain, without any legal right to do so, and it is the duty of Councils to have the matter investigated by the law officers of the city, and to compel the immediate removal of the obstructions. It is asserted that the company claims the right to thus incommode our citizens under the charter of the Atlantic and Ohio Telegraph Company—the one which gives it, a foreign corporation, the right to erect poles and wires in this State—but, if we are not mistaken, there is also a law which requires them to get the consent of the city authorities before infringing upon the rights of our people. No one has yet seen the statute which empowers the Western Union to perpetrate such outrages, and before the highways and byways are any further obstructed the matter should be investigated.—*Sunday Republic* (Philadelphia, Pa.)

The Late Charles E. Perry.

INFORMATION has been received that the remains of the late United States Consul at Aspinwall, Mr. Charles E. Perry, were buried with Masonic honors at Mount Hope Cemetery, on the 18th of October, from Christ Church, Aspinwall. They will be disinterred and brought home as soon as the weather will permit.

The *Panama Star and Herald* of October 24 contains a highly eulogistic notice of the deceased, whose discharge of the difficult and delicate duties of his position appear to have met with the approval not only of the State Department of our own country, but also of the Government and people to whom he was accredited. Upon the day of the funeral the flags in all the Consulates, the shipping in the harbor, and the national flag were kept half mast.

THE UNITED STATES TELEGRAPH MANUFACTURING & SUPPLY COMPY,

PHILADELPHIA, Pa.,

is a chartered Corporation for the manufacture of TELEGRAPH INSTRUMENTS of every description, with the most improved machinery. It is the purpose of this Company to turn out work of the best quality, and unexcelled for neatness and finish.

This class of work embraces in part

MORSE REGISTERS,
RELAYS,
SOUNDERS and
KEYS,

of the latest and most approved patterns.

The wire used in relays and sounders is of a superior quality, carefully tested, and warranted in conductivity equal to ninety-eight per cent. of pure copper. We cover this wire with silk, and furnish it in quantity with this guarantee.

RELAYS

furnished of any desired resistance. When the length of circuit and the number of relays required in the circuit are given, the Relays will be adapted to the circuit or work required.

REGISTERS AND SOUNDERS

made, adapted to one or two Callaud cells, and for one or two Daniell cells, as may be required by the purchaser.

PRINTING TELEGRAPH INSTRUMENTS

for private lines are a specialty. These instruments are simple in their construction, reliable in use, and can be operated with perfect satisfaction by persons having no previous experience.

The Company has ample facilities for repairs of all descriptions.

Relays re-wound and the resistances altered to any desired standard.

The Company have secured the services of DAVID BROOKS as Consulting Electrician, who will give to all electrical questions his valuable knowledge and personal supervision, and Mr. W. P. PHELPS, long and favorably known in the business, as Superintendent.

All orders or communications should be addressed to

WM. D. SARGENT,
Business Manager,
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WANTED—

Telegraph Instrument
Makers.

Several first class workmen can obtain permanent employment upon arrival in San Francisco. Pleasant and convenient working rooms, nine hours per day, good wages, payable in gold, and plenty of "piece" or contract work, at good prices.

None but temperate, industrious and skilful workmen, who have had experience in the best Eastern factories, need apply.

Address, by mail,

Electrical Construction and Maintenance Co.,
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WILLIAM UNGER,

MANUFACTURER OF
TELEGRAPH INSTRUMENTS,
LIGHT MACHINERY,
MODELS, &c.

NEW HAVEN R. R. DEPOT,

Franklin Street, New York (Room 16).

EUGENE F. PHILLIPS,

MANUFACTURER OF
TELEGRAPH OFFICE WIRES
OF ALL DESCRIPTIONS,

Lock Box, 169.

PROVIDENCE, R. I.

With improved facilities for the manufacture of BRAIDED LINEN or COTTON COVERED OFFICE WIRE, either plain or paraffined, I am now prepared to offer to purchasers a SUPERIOR ARTICLE, in any quantity, on the most reasonable terms.

The Gold and Black, and the American District Telegraph Companies have been supplied from my works with the larger part of the office wire used by them.

SEND FOR SAMPLE CARD.

For further information address as above, or

W. H. SAWYER,
General Supt. Am. Dist. Tel. Co.,
69 BROADWAY, N. Y.

AMERICAN FIRE ALARM AND POLICE TELEGRAPH.

GAMEWELL & CO., Proprietors,

104 CENTRE STREET, NEW YORK.

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Special Agent for Virginia and North Carolina.

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Special Agent for Georgia and South Carolina.

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THIS SYSTEM OF

FIRE ALARM & POLICE TELEGRAPH,

WITH A CENTRAL OFFICE,

OR

UPON THE AUTOMATIC PLAN,

is now in operation in the following Cities, to which reference is

made for evidence of its great

SUPERIORITY, VALUE

AND

UNIFORM RELIABILITY.

Albany, N. Y.,
Alleghany, Pa.,
Boston, Mass.,
Bridgeport, Conn.,
Buffalo, N. Y.,
Baltimore, Md.,
Chicago, Ill.,
Cincinnati, Ohio,
Columbus, Ohio,
Cambridge, Mass.,
Charlestown, Mass.,
Covington, Ky.,
Detroit, Mich.,
Dayton, Ohio,
Elizabeth, N. J.,
Fall River, Mass.,
Fitchburg, Mass.,
Hartford, Conn.,
Indianapolis, Ind.,
Jersey City, N. J.,
Louisville, Ky.,
Lowell, Mass.,
Lawrence, Mass.,
Lynn, Mass.,
Mobile, Ala.,
Montreal, Canada,
Milwaukee, Wis.,

New York City,
New Orleans, La.,
New Bedford, Mass.,
New Haven, Conn.,
Newark, N. J.,
Omaha, Neb.,
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Pittsburg, Pa.,
Portland, Maine,
Peoria, Ill.,
Providence, R. I.,
Quebec, L. C.,
Rochester, N. Y.,
Richmond, Va.,
St. Louis, Mo.,
St. John, N. B.,
Springfield, Mass.,
San Francisco, Cal.,
Savannah, Ga.,
Syracuse, N. Y.,
Troy, N. Y.,
Taunton, Mass.,
Toledo, Ohio,
Toronto, Canada,
Washington, D. C.,
Worcester, Mass.

The Distinctive Features of these Systems of

Fire Alarm and Police Telegraphs

ARE,

First—The Automatic Repeater, through which the apparatus may be distributed in a combination of circuits, and the entire system successfully worked, without the constant personal attention of either operators or watchmen.

Second—The Automatic Signal Boxes.

Third—The Electro-Mechanical Bell Strikers, adapted to produce the full tone of the largest church or tower bells.

Fourth—The Electro-Mechanical Gong Striker, for hose and engine houses, by means of which the location of the fire is instantaneously communicated to the members of each fire company.

These Features combined form the

Only PERFECT, COMPLETE and RELIABLE System

OF

FIRE ALARM TELEGRAPH

IN THE WORLD.

It is a sufficient vindication of the claims which are made by the Proprietors of these systems of

FIRE ALARM AND POLICE TELEGRAPHS,

that they have sustained the test of more than twenty years of practical use, and that the efforts which have been repeatedly made to supplant them by other inventions have

COMPLETELY FAILED;

the few instances in which municipalities have been induced to adopt other systems having demonstrated their insufficiency and unreliability, and resulted in their abandonment, and substitution thereof of the

AMERICAN FIRE ALARM TELEGRAPH.

Messrs. GAMEWELL & CO. are the owners of the original FARMER & CHANNING PATENTS, one of the most important of which has just been extended for seven years, and during the past seventeen years have spared no expense or effort to secure improvements, and the Systems are now covered by

MORE THAN TWENTY PATENTS.

The most important improvement which the Proprietors have adopted and introduced is the

AUTOMATIC SYSTEM,

the introduction and operation of which involves so little expense, compared to the benefit which it confers, that even small communities can profitably adopt and maintain it.

The American System of

FIRE ALARM AND POLICE TELEGRAPHS

has met with the universal approbation and commendation of the

People, Municipal Authorities,

AND THE

PRESS

throughout the UNITED STATES and CANADA.

NO EFFORT, TROUBLE OR EXPENSE

is spared by the Proprietors to obtain and secure ANY POSSIBLE IMPROVEMENT which shall increase the

EFFICIENCY,

RELIABILITY and

ECONOMY

of the system. They intend that, as far as possible, it shall be

ABSOLUTELY PERFECT!

The amount of property which has been saved from destruction, and the number of lives which have been preserved through the general adoption of this system, throughout the UNITED STATES and the DOMINION OF CANADA,

CANNOT EASILY BE ESTIMATED,

but that, in every community where it has been introduced for any considerable length of time, they have been enormous, THERE CAN BE NO QUESTION.

The cooperation of TELEGRAPHERS in securing its introduction into their localities is cordially invited, and their efforts will be duly appreciated and compensated.

Any information desired in regard to the above system will be cheerfully and promptly furnished upon application at the office.

A pamphlet, setting forth more fully its advantages and superiority, has been printed, and will be supplied to Municipal Authorities and others interested in Fire Alarm and Police Telegraphy, upon application as above.

CHARLES T. CHESTER,
 104 Centre Street,
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 TELEGRAPH ENGINEER,
 AND MANUFACTURER OF
 INSTRUMENTS,
 BATTERIES,
 AND EVERY DESCRIPTION OF
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BUNNELL'S PATENT REPEATER.

These instruments are now made in two different styles, at \$120 and \$135 a set, consisting of two Relays, two Sounders, two Keys and Governor.

JONES' LOCK SWITCH-BOARD,

a most compact and reliable Switch, forming a clean spring locked connection between any number of wires, occupying for each different connection only one square inch of space, and though made of the largest size, not subject to the warp and contraction of wood-work.

EXCLUSIVE AGENTS OF

A. G. DAY'S

KERITE,

OR

COMPOUND RUBBER COVERED WIRE.

SUBTERRANEAN & AERIAL WIRES,

OF THE

HIGHEST INSULATION.

We are now prepared to furnish, after an experience of three years, an Insulated Wire, which can be buried in the earth or exposed to rain and sun, or to the vapor of acids, without injury. Professor SILLIMAN, who has exposed it to the most destructive agencies, finds that it remains uninjured in an atmosphere of ozone, which would destroy gutta-percha in a few hours. It exceeds glass or any other known substance as a non-conductor.

We have made special arrangements to furnish this article for office purposes at a reduced rate.

ALSO, TO FURNISH

IRON CLAD CABLES,

of the usual size, with KERITE COVER, believing that it will exceed, in insulation for submarine purposes, ANYTHING HITHERTO MANUFACTURED.

We shall be happy to furnish estimates for any amount and size of cable, which will be found to compete with any other construction, both in quality and price.

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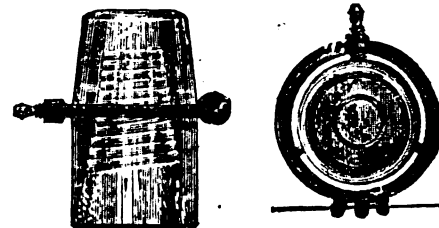
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